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## A CASE OF DIFFUSE, PURULENT, VENTRICULO-SEPTAL MYOCARDITIS WITH ADAMS-STOKES' SYNDROME *


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The subject of suppurative myocarditis has received some attention from ancient writers, since Whittaker[1] states that Galen described this malady in gladiators and Benevenus and Bonetus have also described abscesses in the walls of the heart. Later, Laennec and Meckel cited similar cases.

These cases of suppurative myocarditis are called "myocarditis purulenta" by Aschoff,[2] who shows that they are usually produced by ulcerative endocarditis, intracardiac thrombosis, pericarditis and septic infarction and abscess formation in cases of general pyemia. It will be seen that these purulent infiltrations or abscesses in the heart muscle are secondary processes caused by an antecedent infection. The case we shall later describe is a primary condition and cannot, therefore, be compared to the above mentioned processes.

The condition known as acute interstitial myocarditis, which follows such infectious diseases as diphtheria, scarlet fever and rheumatism, first described by von Hayen,[3] also differs from our case, since it is characterized by an infiltration of lymphocytes, plasma cells and fibroblasts, while the polymorphonuclear leukocytes are absent.

Before describing our case in detail we wish to cite a case of acute purulent interstitial myocarditis following subacute rheumatism which was described by Freund[4] in 1898.

This patient had a frequent pulse, a rise of temperature, precordial pain and delirium. The autopsy showed a flabby heart containing yellow dots and lines, and the microscopic examination revealed a diffuse inflammation with polymorphonuclear leukocytes combined with scattered hemorrhages. The blood-vessels were filled with leukocytes and the small veins contained thrombi. The muscle fibers contained vacuoles; the nuclei were elongated, thickened, fragmented and at times absent, and the cross-striations were often obscure, while the individual fibrils seemed separated one from another. Toward the endocardium they showed fatty degeneration.

The above case is the only one we have been able to find in literature of a true, diffuse, interstitial, purulent myocarditis, but we have collected a few typical instances of circumscribed abscess formation in the heart muscles. Carnas[5] states that abscesses of the walls of the heart have been most frequently observed in pyemia and ulcerative endocarditis. In certain cases there are remissions followed by relapse which give a subacute or chronic character to the disease. Laking[6] describes a case of many months' illness with sudden death, which showed two long-standing abscesses in the apex of the left ventricle, and Roth[7] has shown that these abscesses may undergo calcareous transformation. Chance[8] and Howitt[9] both report abscesses of the heart in children, and nine out of ten cases occur before the thirtieth year. Formad[10] reported a case of abscess of the heart about the size of a large bean with accompanying purulent myocarditis, and it is interesting to note that this condition may develop from a circumscribed abscess. Banks[11] also has described an abscess the size of a pigeon's egg in the left ventricle.

Abscess of the heart follows pyemia or septic endocarditis and is characterized by angina-like symptoms, dyspnea, gallop rhythm, dicrotic pulse and temperature, and Loin[12] states that this condition may be distinguished from septic endocarditis by a more rapid pulse in the former condition.

The association of heart-block with infectious diseases has recently been established. The few cases thus far reported have been reviewed by Peabody,[13] who reports an additional case. Some of the patients recovered. Autopsies have revealed various lesions of the bundle of His, such as anemic necrosis of the muscular septum in the region of the bundle, cellular infiltration, fibrous degeneration with a calcareous nodule pressing on the bundle; and James[14] has reported a case in which the bundle of His was completely destroyed by an ulcer in the interventricular septum due to a streptococcus septicemia.

Other conditions which may produce heart-block and Adams-Stokes' syndrome are syphilitic gummata and scar formation, calcareous deposits, fatty infiltration, septic and benign infarction and fibrous tumor of the


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* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

1. Whittaker: Twentieth Century Practice of Medicine, 1905, iv, 127.
2. Aschoff: Pathologische Anatomie, Jena, 1909, ii, Special Part.
3. Von Hayen: Arch. de physiol. norm. et path., 1869-70, iii, 81.
4. Freund: Berl. klin. Wchnschr., 1898, xxxv, 1077, 1106.
5. Carnas: Myocardite primitive suppurée du septum, Loire méd., 1892, xi, 113, 120.
6. Laking: Saint George's Hosp. Rep., 1875, vii, 361; Rev. d. sc. méd., 1876, i, 589.
7. Roth: Cited by Ziegler, Lehrbuch der speciellen pathologischen Anatomie, Jena, 1887.
8. Chance: Lancet, London, May 16, 1846, p. 548.
9. Howitt: Lancet, London, June 20, 1846, p. 684.
10. Formad: Tr. Path. Soc. Philadelphia, 1891-3, xvi, 80.
11. Banks: Proc. Path. Soc., Dublin, 1852-53, p. 27.
12. Loin: Ann. Soc. d'anat. path. de Bruxelles, 1880-81, Bull. 30, p. 31.
13. Peabody, F. W.: Heart-block Associated with Infectious Diseases, Arch. Int. Med., 1910, v, 252.
14. James: Am. Jour. Med. Sc., 1908, cxxxvi, 469.

bundle of His, as we have already described in a former article.[15]

We regret that we were unable to obtain any pulse tracings in the case the report of which follows, but the patient was under observation only for several days in the hospital, during which time the sphygmograph was being repaired. Nevertheless, we are convinced that he suffered from heart-block with Adams-Stokes' syndrome. The case is unique because of its association with the rare condition of primary purulent myocarditis.

## CASE REPORT

### CLINICAL HISTORY

*Patient.*—J. C., a man aged 67, by occupation a street-cleaner. His history is unimportant. In early childhood he had measles, scarlet fever and mumps. Apart from these maladies he enjoyed remarkably good health until his thirtieth year, when he contracted syphilis. He developed the usual characteristic secondary symptoms, for which he received several months' treatment. He was always employed at heavy, laborious work. In his earlier days he was strongly addicted to the use of alcohol, mostly in the form of whisky. For the past twenty-five years he drank more moderately.

*Present Illness.*—He continued in good health until seven months before his admission to the Mercy Hospital. At this time he began to have vertigo and syncope with epileptiform seizures. These attacks came on abruptly, frequently without premonition, at other times with a brief aura, consisting of a sense of smothering, scotoma and tinnitus aurium. The patient sank rapidly into a state of semiconsciousness, which was followed by clonic spasms of the facial muscles on the right side and tingling and formication in both upper extremities. Other associated symptoms were vasomotor disturbance, oppressive sensation in the epigastrium, with pain which radiated to both arms, and intense dyspnea. The entire seizure lasted only a few minutes. These attacks came on very frequently. They were usually single, but sometimes five or six followed in close succession; excitement or physical exertion had a tendency to produce them. For this reason the patient had been unable to follow his vocation for the past seven months. Three months after the onset of the attacks a cough developed, which was accompanied with a slight expectoration. Dyspnea on slight exertion became an annoying symptom. Later he noticed enlargement of the veins in his legs, which subsequently became varicosed. There was no edema. He had a constant feeling of pressure in his epigastrium and dyspeptic symptoms were marked. On March 25, 1910, on the advice of his physician, Dr. C. F. Blake, he was sent to the hospital.

*Physical Examination.*—This revealed the following condition: The patient looks fairly robust, is well developed and in a good state of nutrition. Mentally he is apathetic, inclined to stupor and talks incoherently, but, when aroused he appears nervous and apprehensive and responds readily to inquiries in a perfectly rational manner. The face is pale, the lips slightly cyanosed and the conjunctivæ anemic and injected. The pupils are equal and react sluggishly. The tongue is coated and flabby with marginal indentation. The mucous membrane of the tongue and buccal cavity show a slight degree of cyanosis. There is a small patch of alopecia of the scalp, and the hair and eyebrows come out readily. The jugular bulbs and the superficial veins of the neck are distended and pulsate. The chest is somewhat emphysematous in type. Breathing is irregular and, at times, Cheyne-Stokes in character. Percussion of the lungs shows hyperresonance over the anterior and lateral aspects of the chest and over the upper half posteriorly. The bases of both right and left lung are moderately dull. Fremitus is generally decreased. On auscultation emphysematous breathing is heard over the entire chest and a few dry scattered râles are heard.

Heart: The maximum apex impulse is in the fifth interspace at the mammillary line. There are no abnormal areas of pulsation. Relative cardiac dulness extends 1.5 cm. to right of the right sternal border and the distance from the mid-sternal to the left border at the apex measures 9 cm. Dulness begins above at the lower border of the second rib. There are no cardiac murmurs at the apex; both sounds are clear and distinct. The first sound, however, is not entirely normal, as it lacks the so-called booming quality which is a distinctive feature of the mitral systolic sound. The aortic and pulmonary first sounds are almost inaudible. A reduplication of the second sound is heard at the aortic and pulmonary areas, and also at an area corresponding to the junction of the fourth interspace and left sternal border. Bradycardia is pronounced and the cardiac rhythm is fairly good. There are from 44 to 46 apex-beats per minute, while there are from 86 to 94 jugular pulsations, denoting practically a 2 to 1 rhythm. The radial pulse is likewise slow (46 per minute), but the rhythm is good and pressure is minus. The ratio between the auricular and ventricular systole is disturbed when the patient exercises.

The blood-vessels are somewhat thickened, but no more so than one would expect to find in a man of the patient's age. With the exception of double inguinal hernias the abdominal examination is negative. The superficial veins of the lower extremities are engorged. Reflexes are not disturbed. There is a slight enlargement of the cervical and inguinal glands.

Urine: Specific gravity, 1,013; traces of albumin; otherwise negative.

*Course of Disease.*—March 28: The patient had several seizures during the night, following each other in close succession, and to-day he appears exhausted and drowsy. He has Cheyne-Stokes breathing and voids large quantities of urine.

March 29: Slept well during night and shows a general condition of improvement. Radial pulse is fairly regular but slow. Jugular pulse well marked. Two pulsations occur to one radial.

March 30: Radial pulse, 43; jugular, 86. Forced exercise in bed produced an acceleration of the venous pulse to 98, but had no effect on the radial pulse. The following records taken during the day show the relation between the radial and jugular pulses:

| Time. | Radial. | Jugular. | Time. | Radial. | Jugular. |
|---|---|---|---|---|---|
| 9:30 a. m..... | 48 | 99 | 12:00 m. ..... | 46 | 94 |
| 10:00 a. m..... | 46 | 84 | 12:30 p. m..... | 44 | 90 |
| 10:30 a. m..... | 50 | 104 | 1:00 p. m..... | 48 | 96 |
| 11:00 a. m..... | 48 | 98 | 1:30 p. m..... | 42 | 90 |
| 11:30 a. m..... | 52 | 90 | 2:00 p. m..... | 50 | 96 |

March 31: Patient felt comfortable during the early part of the night, but later in the night he ventured out of bed and was found in the toilet with an acute paroxysm. He had another paroxysm shortly after returning to bed, from which he quickly recovered. Several hours later he was found dead in bed.

During his entire stay in the hospital the patient's temperature was normal.

### GENERAL AUTOPSY REPORT

*Body Section.*—Lungs show some edema and congestion. Pericardial sac filled with a bloody fluid. Heart somewhat enlarged. Arteries show some sclerosis. Liver about normal in size, but showed chronic passive congestion. Spleen normal. Right kidney much enlarged and several small cysts on its surface filled with a watery fluid. Left kidney enlarged and both showed chronic nephritis. Stomach showed marked congestion and acute gastritis.

Owing to an unfortunate accident no microscopic sections were made from the viscera, other than the heart, but it may be taken for granted that there was no acute purulent condition present and that the sections would have shown only a chronic nephritis and an acute congestion of the gastric mucous membrane.

*Bacteriologic Examination.*—No cultures were made, but stained specimens showed a few pneumococci in the purulent areas of the heart muscle.

### EXAMINATION OF HEART

The heart is somewhat enlarged, weighing 450 gm. The measurements are as follows: Thickness of left ventricle midway 18 mm.; length of left ventricle 8.5 cm.; aorta, just above valves 8 cm. in circumference; interventricular septum 9 mm.

15. Beck and Stokes: A Clinical and Pathologic Study of a Case of Adams-Stokes Disease, Arch. Int. Med., 1908, ii, 277.

thick. Right side of heart: right ventricle 8 mm. thick; length of right ventricle 8 cm.; pulmonary artery just above valve 5.5 cm.

The papillary muscles of the right and left ventricles are flattened. The heart muscle is reddish brown in color, and, on cutting through the interventricular septum, near the auriculoventricular septum, fine yellowish streaks can be seen. On making a flat section of the muscle of the left ventricle opposite the interventricular septum, small grayish streaks and small reddish dots are apparent in the muscular substance which has been laid open. The valves are normal. The aorta contains a few small yellowish plaques just around the entrance of both coronary arteries, and there are numerous smaller plaques scattered over the intima of the rest of the aorta.

Fig. 1.—Heart, showing the situation of the various blocks from which the sections were made. These are numbered as in the text. These blocks of tissue were cut out of the heart in order to obtain cross-sections of the bundle of His.

*Coronary Arteries.*—Both coronary arteries were dissected out to the ramification of their finest branches, and the general condition is as follows:

Left Coronary Artery: The main artery, the left descending branch and the circular branch all contain numerous bulbous thickenings, giving the artery an irregular, beaded or nodular appearance. To the touch, the entire artery is much firmer and harder than normal, and the irregular miniature sausage-shaped nodules have the feel of hard bony tubes. A fine probe measuring 1 mm. in thickness can be passed through the circular branch and also through the descending branch to a distance of 6 cm., but the lumen is evidently narrowed, as the probe passes with difficulty. On opening the artery, the intima is seen to contain numerous irregular yellowish elevations, most of which contain a soft pultaceous yellow material, or a much firmer calcareous deposit forming thick plates.

Right Coronary Artery: This artery does not show the same nodular condition, but presents rather a general indurated, cord-like, leathery feeling. On opening up the artery, there are a few small yellowish plaques containing a soft, pultaceous, yellow, cheese-like material, but there are no calcareous deposits. The intima seems universally thickened, presenting a firm, tough, thickened tissue. A probe 1 mm. in thickness passes 4 cm. through the main artery, where it is abruptly stopped by an adherent thrombus which extends for a distance of 3 cm. in the descending branch supplying the right ventricle.

*Histopathology.*—Before describing the microscopic changes present in the heart, it is necessary to describe the situation of the various blocks of tissue from which the sections are made, and this can best be explained by referring to the photograph of the heart which is seen in Figure 1.

Section 1 was made from a block of tissue bounded to the left by the endocardium of the left ventricle, to the right by the endocardium of the right ventricle, and above and below, by the fibromuscular wall of the auricular septum. The section, therefore, passes from above downward directly through the center of the fossa ovalis, and includes the muscular structure of the auricular septum for a considerable distance below the fossa. It, therefore, would show a cross-section of any of the rootlets of the bundle of His, taking their origin from the region of the septum. The area formerly occupied by this block of tissue is indicated by the number 1 which will be found within the limits of the first set of white lines.

Sections 2, 3, 4, and 5, were made from blocks of tissue which include the horizontal course of the bundle of His, showing, therefore, cross-sections of the bundle. They form triangles whose apices are represented by a point just above the auriculoventricular fibrous ring, and whose sides are formed by the endocardium of the right and left ventricles. The bases are formed by lines passing from the left to the right ventricle directly through the interventricular septum. The situation of these blocks is indicated in Figure 1 by the numbers mentioned above, and their distal planes are designated by the white lines.

Sections 6, 7, 8 and 9 are made from blocks which follow a line perpendicular to the apex, which begins at the base of the last section, and ends at the apex. These blocks pursue the general course of the two branches of the bundle of His for the right and left ventricle, and the sections, therefore, show these branches in an oblique or horizontal plane. The white lines show the distal limits of each block, while the numbers show the situation of these blocks.

Sections 10, 11, 12 and 13 are taken from blocks which pursue a gentle curve around the very limits of the auriculo-

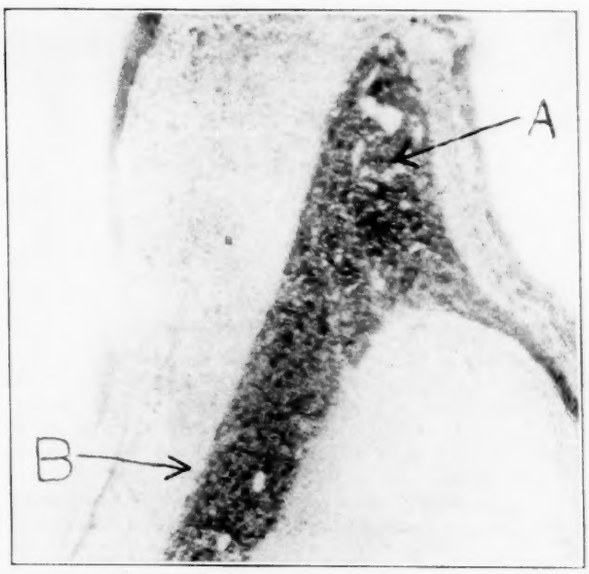


Fig. 2.—Cross-section of the bundle of His at A, in which there were numerous hemorrhages. The auricular septum is above and the ventricular septum below, the bundle running in a groove between its two septa. The thick bundle passing down to the left is the bundle for the right ventricle and the thinner branch nearer the endocardium is the branch for the left ventricle.

ventricular septum adjacent to the apex, and they end at the very tip of the apex of the heart. They are numbered by black figures, and the black lines indicate the limits of each block of tissue.

*Microscopic Examination.*—No. 1: This section, passing through the muscles of the auricular septum, the fossa ovalis and the lower portion of the auricular wall, shows a few strands of the bundle of His, taking their origin from the thin wall of the fossa. The nuclei are larger than the rest of the heart muscle, and the muscle fibers are separated and

surrounded by a connective tissue containing many fibroblasts, lymphocytes and a few polynuclear leukocytes.

No. 2: This is a section through the proximal end of Segment 2, showing the auricular septum, the ventricular septum and the auriculoventricular groove containing the bundle of His. The bundle of His and the connective tissue around it are infiltrated by many polynuclear leukocytes. The muscular structure of the ventricular septum, especially that near the endocardium of both ventricles, presents a remarkable appearance. There is a diffuse purulent infiltration of the muscles separating individual fibers or groups of fibers. Many of the fibers show necrosis, and there are also groups of leukocytes which show much nuclear fragmentation. Other groups of leukocytes form elongated abscesses.

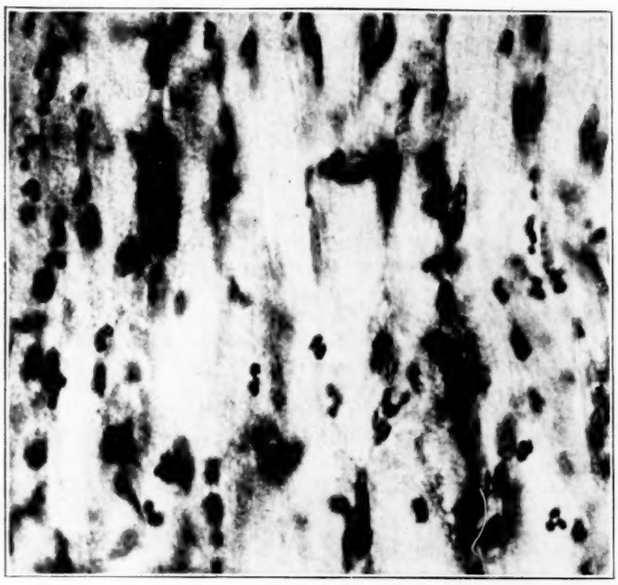

Fig. 3.—From a photomicrograph taken at B in Figure 2. It shows diffuse purulent infiltration, fragmentation, atrophy and hyperchromatosis of the nuclei of the heart muscle.

No. 3: Conditions are practically similar to those found in No. 2.

No. 4: This shows the thin connective tissue septum of the auricle with many connective tissue cells but no muscle fibers. Below the septum in the auriculoventricular groove, the bundle of His can be distinctly seen, together with its branches for the right and left ventricles. The central bundle itself contains many scattered hemorrhages, and the branches for the right and left ventricle soon become involved in the general purulent infiltration, described above. This purulent infiltration can also be seen scattered in certain areas throughout the entire septum, and these areas show intense granular degeneration of the muscle fibers. The purulent infiltration is much more intense just beneath the endocardium of both ventricles, and this infiltration often forms a network between the muscle bundles of degenerated necrotic muscle fibers. The branching of the bundle is well seen in Figure 2.

No. 5: In this section the central bundle has apparently disappeared but the left branch is still visible, and at some distance from the bifurcation, it shows moderate purulent infiltration. There is also marked purulent infiltration of the entire septum in the lower half of the section, especially towards the endocardium of the right ventricle.

No. 6: This section is made from a series of blocks which are perpendicular to the apex and which follow the general course of the two bundles of His, as they course downward in the ventricular septum towards the apex. It is impossible to locate the cross-section of any particular bundle of muscle fibers which would correspond to either of the branches of the bundle of His, and there is no marked purulent infiltration of the muscle in this section. The thickened endocardium does show a slight infiltration with polynuclear leukocytes and lymphocytes, and there are a few similar groups of cells scattered through the section. There are areas of hemorrhages scattered through the muscular structure, and the blood-vessels are crowded with leukocytes and lymphocytes.

No. 7: This section shows areas of intense hemorrhage together with coagulative necrosis of the muscle fibers, and there is an increase of connective tissue elements between the muscle bundles, indicating a beginning chronic interstitial myocarditis, and some of these areas of coagulative necrosis show marked nuclear fragmentation.

No. 8: In this section through a plane which is nearer the apex, there are, again, areas of marked purulent infiltration with necrosis of the muscle fibers. There is also some chronic interstitial myocarditis and scattered hemorrhages.

No. 9: This ends the series made from blocks approaching the area of the apex, and the conditions are similar to those described in No. 8. A section through several large papillary muscles fails to show any purulent infiltration, but the intense congestion of the capillaries in certain areas of the heart muscle is marked.

No. 10: This section is taken from the first of a series of blocks which pursue a gentle curve around the limits of the auriculoventricular septum ending at the apex. The heart muscle shows extensive necrosis, numerous hemorrhages and congestion of the capillaries, and there is slight, scattered purulent infiltration. The numerous papillary muscles do not show any abnormal changes. A branch of the coronary shows a greatly thickened intima containing numerous connective tissue cells.

No. 11: This tissue shows extensive areas of necrosis and hemorrhages, and these areas are infiltrated by small mononuclear lymphocytes, singly or in groups, and the blood-vessels also contain increased number of lymphocytes.

No. 12: This section is principally marked by extensive areas of hemorrhage and some chronic interstitial myocarditis.

*Summary.*—It will be seen by reference to Figure 1, that the sections are taken from blocks beginning at the fossa ovalis

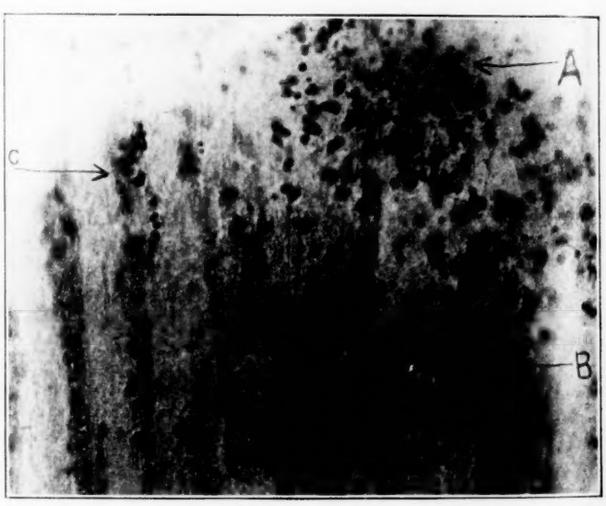


Fig. 4.—Area of necrosis with intense nuclear fragmentation and purulent infiltration at A. At B the general purulent infiltration is seen, and at C this purulent infiltration pursues a linear course between the individual muscle fibers.

in the auricular septum, and describing a semicircle passing outward along the horizontal course of the bundle of His, then downward through the ventricular septum, and finally describing a gentle curve, the semicircle ending at the very tip of the apex.

There were no pathologic changes found in that portion of the auricle from which the bundle of His takes its origin, but after the bundle has entered the auriculoventricular groove, it is beset by numerous hemorrhages, and its two branches show moderate purulent infiltration. The rest of the muscular structure of the septum shows marked purulent infiltration in the linear areas, beneath the endocardium of

both of the ventricles and in scattered masses throughout the tissue. There is also marked arteriosclerosis.

*Sections From Other Portions of the Heart.*—In addition to those described above, sections were made from various other portions of the heart in order to study the extent of the purulent infiltration and the condition of the blood-vessels.

Those of the first set were made from the left auricular appendix, the septum between the auricles, the wall of the right auricle and the musculi pectinati of the right ventricle. The left auricle shows no abnormal changes, but the wall of the right auricle with its musculi pectinati shows a few polynuclear leukocytes in single rows, or small groups, and the nuclei of many of the muscle fibers are shrunken and irregular in size and shape.

Another set of sections was made from the wall of the left ventricle at the left apex, from four separate areas in this wall opposite the septum, and running from the base to the apex, through the papillary muscles, and from the interventricular septum. The first section near the apex shows an adherent antemortem clot attached to the endocardium by means of fibrin. There are many endothelial cells and fibroblasts entering this fibrin in an attempt at organization, and the endocardium is thickened and infiltrated by leukocytes, red blood-corpuscles and fibroblasts. The clot contains masses of fibrin and polynuclear leukocytes and fibroblasts. The muscle fibers next to the endocardium contain numerous large vacuoles, only a mere shell remaining, and the nuclei are frequently shrunken. There is no diffuse purulent infiltration. The five sections from different portions of the left ventricle opposite the septum do not show any marked changes, but the muscle fibers of the papillary muscles near the endocardium show vacuolization. The septum at the apex shows no marked changes, except fatty infiltration near the pericardial surface.

The right coronary artery 6 mm. from the mouth of the aorta shows an interesting condition. The intima is greatly thickened, measuring from 2 to 10 times the thickness of the media adjacent to it, which shows marked atrophy. It contains a moderate number of fibroblasts and two large irregular areas of calcareous deposits. The lumen is completely occluded by a thrombus consisting mainly of red blood-corpuscles and fibrin, but containing groups of organizing fibroblasts and a few polynuclear leukocytes. This thrombus is adherent to the intima from which the endothelium has become detached. A smaller branch of this coronary artery also shows the same thickened intima, and the lumen is reduced to a small irregular channel. The adventitia contains numerous fibroblasts filled with small brown granules of blood pigment, and the muscle fibers of the media show great atrophy. The intima contains scattered polynuclear leukocytes, granular masses of lime salts, and fibroblasts. The same artery nearer the aorta also contains an adherent thrombus of the intima, and shows great thickening of the intima and, just where this is attached to the thrombus, it is highly infiltrated by leukocytes.

## SUMMARY

The clinical history of this case indicates that the patient had been suffering from syncopal attacks for a period of seven months. It is difficult to account for these earlier attacks unless we can believe that there were recurrent purulent infiltrations of the bundle of His with damage to the muscle fibers. We found no other lesions of the bundle of His and can only report the patient's condition for about a week prior to his death, together with the discovery of an acute primary purulent infiltration involving the bundle of His.

We desire to thank Dr. H. W. Stoner for the photograph and photomicrographs, and Dr. J. J. O'Malley for assistance rendered.

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**Bromids in Confirmed Epilepsy.**—W. A. Turner, in the *Lancet*, states that in cases of confirmed epilepsy with mental deterioration the bromids are of relatively little value.

# A STUDY OF A CASE OF HEART-BLOCK

## WITH ALTERNATION OF THE SYSTOLIC AND DIASTOLIC JUGULAR WAVES*

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So much has been written in the past few years about heart-block that the report of a single case can no longer be considered worth while. My reason for reporting the present case is that it presents a feature which, so far as I can learn, has not yet been described. It is apparent from the wide diversity of symptoms and of tracings in the cases constantly being reported that not all cases of heart-block are alike and there is certainly much still to be learned about the clinical picture the disease presents. Each case recording some new point adds to the sum of our knowledge.

Briefly stated, the phenomenon essential to the diagnosis of heart-block is the dissociation of the rates of pulsation of the auricles and ventricles. This is generally attributed to an affection of the bundle of His along which travels the stimulus from auricle to ventricle. The block may be complete, in which case the auricular and ventricular rates are entirely different; or it may be partial, as in my case, when some of the auricular stimuli pass through to the ventricles. The

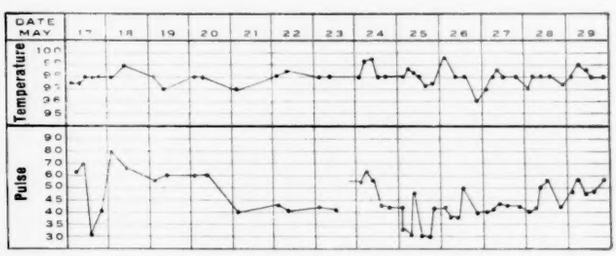


Fig. 1.—Showing the variation in the pulse; record taken every four hours.

peculiar feature which my patient presented in addition was an alteration of the systolic wave, (*v*), and the diastolic wave, (*h*), appearing in the jugular pulsations.

## REPORT OF CASE

*History.*—The patient, a white male, aged 75, was admitted to the Touro Infirmary, New Orleans, May 17, 1909, complaining of headaches, dizziness, constipation, belching, and involuntary contractions of the abdominal muscles just before going to sleep. His complaints were of four years' standing. His family history was entirely without interest for the present inquiry. He had always been perfectly well and did not remember any other than the most trifling illness. He had had gonorrhea thirty years ago. He chewed and smoked tobacco moderately and seldom drank alcohol.

*Examination.*—The physical examination showed a well-developed and well-nourished and well-preserved man. The heart was practically normal in size, the apex being just inside the left nipple and the right border at the right border of the sternum. No murmurs were to be heard. There was a moderate peripheral arteriosclerosis. The urine showed no abnormalities. The pulse showed a considerable range in frequency, beating sometimes at the rate of 30 to 35 and at other times as rapidly as 70 to 75. The heart-rate, counted at the apex, corresponded always with the radial pulse. The variation in the pulse is shown in the accompanying chart (Fig. 1), on which is recorded the rate taken every four hours. On June 12, 1909, he had "a spell of dizziness and almost lost con-

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

sciousness for a second." He was taken to his room and there lay down. Shortly afterward his pulse was found to be 36 and weak. Heart-sounds could not be heard. After two or three minutes the pulse jumped to 72 and became stronger. A few weeks after his admission to the hospital he was transferred to the Julius Weis Old Folks' Home, which is a department of the Touro Infirmary, and has remained under observation during the year which has elapsed. He has continued to complain of frequent dizziness but there have been no more syncopal attacks.

I was fortunate enough on several occasions to get tracings at the moment of the change in his pulse-rate. Such a tracing is given in Figure 2. This tracing was made October 17, 1909. At the beginning of the tracing the auricular rate was 66 while the ventricular was 33. Every other stimulus from the auricle, therefore, was blocked. The *a-c* interval (the time between the auricle beat and the ventricle beat) was 1½ (expressed in fifths of a second). The normal interval is about one-fifth of a second. At the point marked *x* the block suddenly ceased and all the auricular stimuli passed through to the ventricle. The rates of the auricles and of the ventricles were now both the same, 60. The *a-c* interval continued to be one and a half fifths.

In order to attempt an explanation of this alternation it is necessary to stop here to inquire into the manner in which these waves are produced. The wave *v* is explained by Mackenzie[1] in this way: The blood (during ventricular systole) "comes mainly from the periphery into the auricles through the veins. When the auricle becomes filled the surplus distends the superior vena cava and jugular, and hence appears in the tracing as a wave." If we assume this as the correct explanation of the occurrence of the wave, then we must, in order to account for the alternation, assume that in some instances there is a greater surplus distending the vena cava and jugular than in other instances, or at any rate the surplus is sent back or held back with varying force. Since there is no reason to think that the amount of blood flowing from the periphery through the veins to the auricles varies so considerably and so regularly in volume from second to second, we are forced to consider that the cause of the alternation must lie in some condition of the auricular wall. It seems probable that a varying tonicity would permit the auricle to be distended to a varying degree. At times, therefore, the auricle would contain a larger amount of blood than

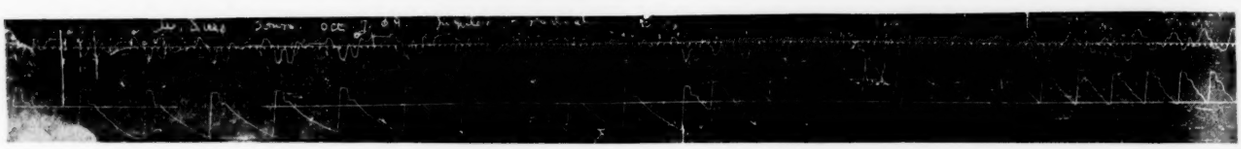

Fig. 2.—Pulse-tracing taken at the moment of change of pulse rate. At the beginning of the tracing the auricular rate was 66, while the ventricular was 33, afterward 60, showing block of every other stimulus from the auricle. No alternation of any waves; *a*—*c*=1½; continues the same after disappearance of block.

Fig. 3.—Tracing showing similar block of every other auricular stimulus. Auricular rate 60; ventricular 31.5; *a*—*c* interval=1½; no alternation of waves.

Figure 3 shows a tracing taken Feb. 20, 1910. Here there is a similar block of every other auricular stimulus. The ventricular rate was 31 and the auricular rate 60. The *a-c* interval was somewhat longer than on the previous occasion, being one and two-thirds as compared to one and a half. Neither of these tracings presents the unusual alternation of the systolic and diastolic waves. This is seen apparently only in tracings where there is no heart-block. A good illustration is given in Figure 4. Here it is very easy to see in the jugular (the upper tracing) that the waves *v* and *h* are alternately high and low. Thus in cycles 6 and 8 they are high and in 7 and 9 they are low. The alternation is clearer in Figure 5, where the enlargement is greater. The wave *h* is not lettered here but it is the wave following immediately after the *v* and it will be observed that its alternation corresponds to that of the *v* wave. In both of these tracings there is no block, although the slowness of the radial pulse would have led one to suspect its occurrence. The rate of both auricles and ventricles was 46. The delay of the auricular stimuli is evidenced by the increased *a-c* interval—two-fifths of a second.

at others, and in consequence there would be a smaller surplus left to distend the vena cava and the jugular. This would make a smaller wave. When the tone of the auricle was greater a smaller amount of blood would be accommodated, a larger surplus would overflow into the vena cava and jugular and a large wave would be caused. The common occurrence of a pulsus alternans in the peripheral circulation presents an analogy which may be used as an argument in favor of the explanation I offer. If there may exist an alternation of the contractility of the ventricle, is it not reasonable to suppose that there may be an alternation of the tonicity of the auricle?

We may now turn our attention to the *h* wave and shall find, as I think, that the cause of its alternation lies in the same variability of the auricular tone. This *h* wave was described by Gibson[2] and Hirschfelder[3] (independently) to the inrush of the blood from the auricles into the ventricles after the opening of the auriculoven-

1. Mackenzie: Diseases of the Heart.
2. Gibson: Lancet, London, Nov. 16, 1907.
3. Hirschfelder: Am. Jour. Med. Sc., September, 1906.

tricular valves, causing the leaflets to be floated up, and bringing about a transient closure of the valves. This explanation is generally accepted. If this is correct, then it is apparent that the condition of the auricular wall will be the chief factor in determining the size of the wave, which will record the influence of this closing of the valves as a wave in the jugular tracing.

The tracing shown in Figure 6 was obtained at the same sitting as that in Figure 4. The plateaus succeeding the *v* waves and preceding the carotid, *c* waves were thought when the tracing was first studied to be due to the auricular contractions. In other words, they were considered to be *a* waves. There was, therefore, apparently an alternating condition of the auricular contracility. This was, however, a faulty intrepretation as we shall see in a moment. Such an alternans action of the auricles has been described by Griffith.[4] It was accompanied by an alternating ventricular contraction.

Griffith explains the alternately large and small auricular waves as follows:

The primary condition is the alternans action of the ventricles. When the systoles are strong they last long enough to prevent the quickly following auricular contraction from driving the blood freely or at all into the ventricles and so a large wave is seen in the jugulars. When the ventricular systoles are weak they do not last so long, and the auricle can drive its blood in larger amount into the ventricle and consequently the jugular wave will be smaller. It is of course only when the *a-c* interval is unduly long, as it was in this case, that alternately large and small auricular waves could be determined in this way by an alternans ventricular action.

There was, however, no condition of this sort present in my case. On a closer analysis of the tracing in Figure 6, and in comparing it with the other tracing made at the same time, it became evident that the plateaus already mentioned were due not to the auricular contraction *a*, but to *h* plus *a*. The initial rise of the plateau is due to the *h* wave and its level is maintained by the oncoming of the *a* wave which is not visible as an additional rise.

On two occasions I tried to ascertain the effect of atropin on the block. On both occasions I gave 1/60 of a grain hypodermatically and in both instances there was absolutely no result from its administration. Although the radial pulse was slow, (46), and I had expected to find a block present, this was not the case either time. Hence, I am unable to say what effect atropin would have on the block.

I desire to express my obligation to Prof. George Dock, who first pointed out the alternation of the waves.

602 Perrin Building.

Fig. 4.—Tracing made when there was no block, showing the alternation from high to low. Diastolic wave *h*; alternation of *v*; alternation of *h*; *a*—*c*=2; ventricular rate 46. No block.

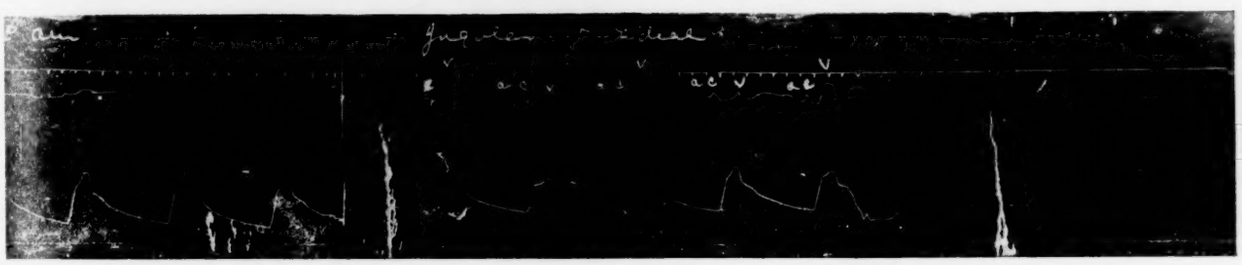

Fig. 5.—In this figure the alternation is clearer, the enlargement being greater. Ventricular rate 46; alternation of *v*; alternation of *h*.

Fig. 6.—Tracing obtained at same sitting as Figure 5, showing apparent alternation of *a* waves. The initial rise following the *v* wave is due to the *h* wave and its level is maintained by the oncoming of the *a* wave, which latter is not visible as an additional rise, hence *a*—*c* cannot be measured. Ventricular rate 46.

4. Griffith: Quart. Jour. Med., January, 1910.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. LEMANN AND BECK AND STOKES

DR. HAVEN EMERSON, New York: I have been much interested in result of experimental procedures or distention of the auricles with saline solutions. If one places a dog under ether anesthesia, and floods the auricles quickly with saline solution, the animal will develop auricular paralysis. But if one makes a slow infusion of the saline solution, there will result a condition of auricular vibration (fibrillation). It has been found that by replacing the blood of any tissue by any of the usual artificial circulation ordinary fluids we alter the tone of that tissue, especially the muscular tissue; therefore it is entirely conceivable that by flooding the auricles with saline solution there results an alteration of the *a* wave such as shown by the study just reported. The analysis of heart-block has been explained as being the result of an alteration of the tonicity of the auricular wall. So far as is known, the tonicity of the blood vessels alters but slowly. It must be

remembered that the heart muscle has been shown to correspond in every way with the skeletal muscles as regards the output of work and conditions under which work may be done to the best advantage as regards time or load. The heart muscle, however, does not appear to alter in tone so rapidly as do the skeletal muscles. We should consider the possibility that the tone of the muscle of the heart may alternate nearly as does the tone of the skeletal muscles. Until we can prove consistently that certain procedures alter the tone of the heart muscle we must be conservative in accepting such a change of tone as an explanation of or accompaniment of heart-blocks as instanced in the papers read.

DR. ALBERT E. TAUSSIG, St. Louis: I have under observation a case of congenital stenosis of the pulmonic orifice with a patent ductus arteriosus which shows a phenomenon similar to that described by Dr. Lehmann. The patient is a young man, aged 19, a shoemaker. He is able to earn a good living at his work in spite of his cardiac defect. The heart is enlarged and he has the typical murmur and other phenomena characteristic of stenosis of the pulmonic orifice. The *a* wave in the jugular bulb is exaggerated and shows well-marked alternation in height, especially when he is under the influence of digitalis. Tracings taken some weeks ago show that the radial pulse is about normal, while the jugular pulse shows a high *a* wave which alternates in height. This alternation occasionally fails. Another interesting feature of these curves is that at the same time of the alternation of the *a* wave there is an alternation of the *a-c* interval. The higher the *a* wave the longer the *a-c* interval. This is the reverse of what one might expect *a priori*.

## INSTRUCTION OF THE PUBLIC IN ANTI-TUBERCULOSIS MEASURES BY A TRAVELING CAR EXHIBIT

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ST. LOUIS

When the Missouri Association for the Relief and Control of Tuberculosis was formed in 1907 a main purpose of the organization was declared to be the enlightenment of the public on the disease in question by means of lectures, addresses, demonstrations, and exhibits, these activities being a necessary preliminary to a right understanding of the subject thus presented, and

Fig. 1.—Exterior view of antituberculosis exhibit car.

to afford an intelligent basis on which local organization could be brought about.

To the extent that its limited means allowed a consistent effort was therefore made by the association to enlist the interest and aid of local communities through their medical, social and business organizations, and with some success, the medical societies naturally being the leaders and chief supporters of such movements and auxiliary branches were formed in a number of cities and counties of the state. It was found, however, that these bodies tended in time to become listless, and in casting about for other means of awakening interest in the subject of tuberculosis and its prevention, the idea was conceived that a well-chosen exhibit installed in a railway coach and sent over the railroad lines in charge of a qualified staff would very likely prove to be the most effective form in which such an object lesson could be presented to the public at large.

With this end in view the association early in 1908 made overtures to the State Board of Health suggesting cooperation and joint effort to accomplish this undertaking, but as an outcome difficulties appeared and the negotiations were brought to a close.

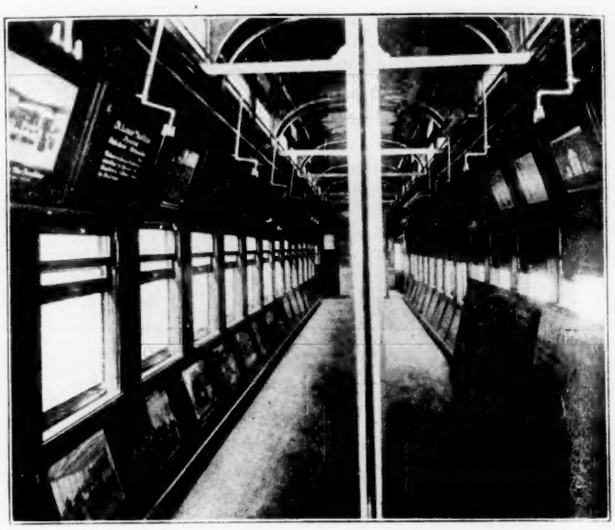

Fig. 2.—Interior view of antituberculosis car.

The project, however, was not lost sight of and endeavors were made to secure funds for this purpose, which hope was realized last June when the announcement was made in the Section on Preventive Medicine and Public Hygiene at the annual meeting of the American Medical Association in St. Louis that a check was in hand ample in amount to cover for a limited time the expenses involved in the equipment and operation of the contemplated railroad car service.*

The managers of railway systems operating lines in Missouri were at once approached with representation touching the plans of the association, with the result of securing a prompt response from the St. Louis and San Francisco System, a first-class day coach being tendered with a promise that it would be turned out of the shops in complete order to receive the exhibit as planned, with special devices for hanging and lighting, no charge to be made for the car or for hauling it, while free transportation for five persons would be supplied, if desired, this gratuitous service including even gas, ice, etc.

The St. Louis Municipal Commission on Tuberculosis with generous public spirit offered the free use of their valuable framed exhibit, which it was found could be used to superior advantage in fitting out the car, and acknowledgment of this graceful courtesy was made accordingly.

* The donor of this fund was Mr. Adolphus Busch, a distinguished citizen of St. Louis, who is widely known as a generous giver to many worthy causes. The work of preparing the car for the road in all its details was placed in the hands of a subcommittee composed of Mr. J. H. Lynch, treasurer of the association, Dr. James Stewart and Mr. Robert J. Newton, secretary of the Municipal Commission on Tuberculosis. Miss W. Doyle, assistant secretary to the association, served as advance agent to the car.

The final details respecting the supervision, equipment, routing, etc., of the car were completed toward the end of July, and August 1 was fixed on as the date for starting, a time schedule having been prepared by the officials of the road which covered twenty-four days and provided for stops and demonstrations at thirty-eight towns and cities located in twenty-eight different counties.

It was decided that the offer by Dr. James Stewart, medical supervisor to the St. Louis Board of Education, of his services free as lecturer in full charge of the car be gratefully accepted, and he was provided with a paid helper to look after the property, work the stereopticon and give aid in other ways as required, sleeping quarters being provided for him in the car. It was arranged further that the assistant secretary should travel from five to seven days in advance of the car and make all necessary arrangements for the meetings with the local people at the designated stopping places, getting at once in touch with public officials, physicians, newspaper men, clergy, business men, club women, etc., notices being regularly mailed ahead stating what was desired by her.

The car left St. Louis as per schedule going southward through territory bordering on the Mississippi River to the extreme southeastern part of the state, thence westward along the southern slope of the Ozarks to Springfield and the thickly peopled lead and zinc mining districts of southwest Missouri; then northward along the western border to Kansas City, where two days were spent, the exhibit being removed from the car to the business center of the city. Returning to Springfield by another route, St. Louis was reached by the trunk line of the Frisco system, the schedule having been extended four days in response to a popular demand for more time at different stopping places, the tour closing August 28.

On its second tour the car left St. Louis September 7, via the Missouri, Kansas and Texas system, the plan being to traverse the entire central part of the state from Hannibal on the Mississippi River to St. Joseph on the western border, covering both sides of the Missouri River and visiting some of the oldest and most thickly populated parts of the state The return route was to be by way of the Rock Island railroad, this system equaling the others in the courtesies and services freely extended. The success of this further undertaking seems undoubted as increasing attendance at lectures, with financial support, and growing public interest have uniformly marked its course.

In fitting up the car the space was utilized to the utmost by the device of a partition lengthwise in the center formed of framed pictures hung back to back, as imperfectly shown in the accompanying illustration. The end and side walls were also fully utilized, and on shelves and in lockers an ample supply of literature, buttons, post cards, sanitary folding cups, etc., was to be found.

The association was fortunate in securing the services of Dr. Stewart for this work, who, as a former member of the Missouri General Assembly, was successful in securing legislation providing for the state sanatorium now located at Mount Vernon. A part of the purpose of this tour was that every proper effort should be made to meet the candidates for the legislature in each county and explain to them the objects in view, and by thus interesting them and their people, to secure support for such recommendations on public health lines as may be submitted to the legislative body by the Governor at the session which opens next January, and in this direction much encouragement is reported as a result of the trip. Indeed, it may be claimed with justice, that for a venture which, so far as known, stands unique in its character as a pioneer effort, the undertaking was a conspicuous success, large and interested gatherings being the rule, tuberculous people in rural parts sometimes traveling as many as thirty or forty miles to reach the car in the hope of learning something of benefit to themselves.

It is evident that the higher officials of some of the leading railway lines are beginning to realize the value of such public teaching in disease repression, and this fact was plainly shown in the cordial zeal and skill with which this undertaking was promoted down to the minutest details by Mr. A. Hilton, general passenger agent of the Frisco road, supplemented at certain points by the Saint Louis Southwestern, and the Missouri Pacific railroads, reaching in all a population, not including Kansas City, of nearly a quarter million of people, 1,248 miles being traversed in the tour of the car.

The Missouri, Kansas & Texas Railway management have tendered to this association every facility at their disposal for the operation of the exhibit car over their lines, by means of which a very considerable additional population can be reached, and it is hoped that all the other systems will see the advantage of like action in the warfare against consumption.

A keen interest in public health affairs could have been the only inducement which led the governor of Missouri, Hon. Herbert S. Hadley, to consent to accept the presidency of this association, and this interest was shown to a still greater degree by the official naming of a commission of twenty or more citizens of this state whose duty it will be to make thorough inquiry respecting tuberculosis in Missouri, and frame a report on which he may base recommendations to the legislature for remedial action next year.

While it was found that a considerable financial outlay is involved in the operation of such a traveling exhibit, even when much necessary service is rendered free of charge, still it is firmly believed that the returns to the public in the form of a better knowledge of disease prevention fully repays such expenditures, and it is the hope of the association that additional financial means will be forthcoming to enable this form of instruction to be pushed into every part of the state where the railroads penetrate. Thus far practically the whole burden of this work has been borne in St. Louis, and the available funds of the association have been exhausted in the enterprise herein sketched.

As before indicated, much of the best help and cooperation at the different points was given by the organized medical profession, officials of local societies, councilors, and the president of the state association, Dr. H. E. Pearse, all lending a hand with full sympathy and good will to forward the cause. A number of leading physicians along the route even volunteered their services for work with the car if future tours were found possible. Another factor making for the success achieved was the public press, many of the papers giving colmuns of space to descriptions, with pictures, etc., showing the work and purposes of the car.

# ALOPECIA AND SEBORRHEA *

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Dandruff and loss of hair are two of the minor afflictions of civilized life which are usually sources of constant chagrin to the unfortunate men and women who fall victims to their presence. One or both of these conditions, which even we ourselves experience sooner or later, are brought to our attention as dermatologists so frequently that it seems fitting from time to time to present them as themes for discussion when we meet in the hope that some member here may contribute some small bit of knowledge to a subject which needs so much help from an etiologic and therapeutic standpoint. It is, therefore, because we practitioners are usually so helpless when confronted by a well-established case of alopecia or of seborrhea that I have ventured to summarize my knowledge of these conditions gleaned from the study of 794 examples observed in my personal private practice.

In the following pages I shall deal principally with seborrhea capitis and with alopecia simplex and alopecia furfuracea, but I shall speak superficially on alopecia areata, and alopecia from ringworm, syphilis and overexposure to *x*-rays.

## ALOPECIA

Statistically, I record 679 cases of loss of hair divided clinically as follows:

| | Cases | Males | Females |
|---|---|---|---|
| Alopecia simplex[1] | 115 | 37 | 78 |
| Alopecia furfuracea | 443 | 206 | 237 |
| Alopecia areata | 86 | 46 | 40 |
| Alopecia from ringworm | 16 | 9 | 7 |
| Alopecia from syphilis | 17 | 11 | 6 |
| Alopecia from *x*-rays | 2 | 1 | 1 |
| | 679 | 310 | 369 |

From these figures it will be seen that women are more often affected by loss of hair than men, in the relative proportion of 54 and 46, unless it be that women feel this loss more keenly and therefore consult physicians more freely on this account. It is interesting, however, to note the figures of Elliot,[2] who in his paper of 1892 records about identical percentages, viz. 55 per cent. women and 44 per cent. men. Jackson,[3] on the other hand, in 1893 found the proportions reversed and recorded alopecia in 52 per cent. males and 48 per cent. females.

### *Possible Etiologic Factors in Alopecia Simplex and Alopecia Furfuracea*

From a study of my records it will be noted that heredity, dandruff, systemic depression, fever, operations and maltreatment of the scalp have been connected in the patients' minds with the production of the fall of the hair. Under the heading of systemic depression figure overwork, worry, nervous exhaustion and prostration, recent immigration or foreign travel, pregnancies, and chronic diseases or invalidism. The term "maltreatment of the scalp" is based on my own personal theories as to what is right and what is wrong in the hygiene of the scalp and includes the rough usage of brushes, combs and massage in the presence of dandruff; shampoos less often than once a month or more frequently than once a week; the use of any drugs in any form on the healthy hair or scalp; the continued application of too drying alkaline soaps; the frequent or constant exposure of the uncovered head to the summer sun; the daily sousing of the head in shower-baths or in salt water; and the modern over-treatment of the normal scalp by barbers and hairdressers.

Statistically we find these factors summed up as follows:

| | | Cases |
|---|---|---|
| Heredity: | Father's side of the house | 108 |
| | Mother's side of the house | 51 |
| | Not recorded | 12 |
| | | 171 |
| Alopecia present in brothers or sisters | | 72 |

From these figures it is seen that a hereditary taint exists in 30 per cent. of these individuals. Dandruff was present in 443 patients, a percentage of 79+. Systemic depression was recorded in 120 cases, a percentage of 21+. Fever was noted in 63 individuals, a percentage of 11+. Operations were blamed in 12 persons, a percentage of 2+. Maltreatment was evident in 277 patients, a percentage of nearly 50; and, finally, more than one of the above possible etiologic factors was found in 386 cases, a percentage of approximately 70.

It may be interesting to pause a moment and compare these figures with those of Dr. G. T. Elliot[4] and of Dr. G. T. Jackson[3] who based their figures on 344 and 300 cases respectively.

| | Heredity | Systemic Causes | Seborrhea |
|---|---|---|---|
| Elliot | 1.16* | 5.52 | 91.68 |
| Jackson | 38.32 | ..... | 72.66 |
| C. J. White | 30.64 | 21.50 | 79.39 |

* This percentage relates to alopecia simplex only.

The figures which follow in the rest of this paper are not wholly satisfactory and are comparatively small, as the symptoms had existed so long in many cases that patients were unable to remember the exact date of their beginnings.

### *Ages When Alopecia Simplex First Appeared*

Among those who could be exact there were 25 males and 43 females out of a possible 37 and 78 respectively.

Males: 7 cases began between 16 and 20.
8 cases began between 21 and 25.
6 cases began between 26 and 30.
1 case began at 35.
1 case began at 39.
2 cases began at 46.

It will be seen that this clinically uncomplicated type of loss of hair begins at or before the age of 30 in 84 per cent. of the male cases.

Females: 7 cases began at or before the age of 15.
3 cases began between 16 and 20.
5 cases began between 21 and 25.
4 cases began between 26 and 30.
7 cases began between 31 and 35.
2 cases began between 36 and 40.
6 cases began between 41 and 45.
6 cases began between 46 and 50.
2 cases began between 51 and 55.
1 case began at or before the age of 56.

* Read in the Section on Dermatology of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

1. By this term is meant the simple loss of hair without other objective symptoms.

2. Elliot, G. T.: Sixteenth Annual Meeting of Am. Derm. Assn.; see report, p. 81.

3. Jackson, G. T.: Loss of Hair, a Clinical Study Formed in 300 Private Cases, Tr. Am. Dermat. Assn., 1900, p. 50.

4. Elliot, G. T.: Alopecia and Its Most Frequent Cause, Dermatitis Seborrheica, Tr. Am. Dermat. Assn., 1895, p. 95.

Of the seven early cases five followed acute febrile disturbances. Between the ages of 15 and 30, however, we find that 33 per cent. of these women developed their simple alopecia, contrasted with a respective percentage of 84 in men, whereas between the ages of 31 and 50 we note a percentage of 58, figures which force us to the conclusion that alopecia simplex develops much later in women than in men.

*Ages When Dandruff and Alopecia Appeared in Alopecia Furfuracea*

DANDRUFF

Males, 91 cases.

| | | | | |
|---|---|---|---|---|
| 3 | cases | began | between | 9 and 10 |
| 8 | cases | began | between | 11 and 15 |
| 31 | cases | began | between | 16 and 20 |
| 25 | cases | began | between | 21 and 25 |
| 14 | cases | began | between | 26 and 30 |
| 8 | cases | began | between | 31 and 35 |
| 1 | case | began | at | 37 and 1 at 43 |

Females, 75 cases.

| | | | | |
|---|---|---|---|---|
| 3 | cases | began | between | 7 and 10 |
| 12 | cases | began | between | 11 and 15 |
| 10 | cases | began | between | 16 and 20 |
| 13 | cases | began | between | 21 and 25 |
| 11 | cases | began | between | 26 and 30 |
| 12 | cases | began | between | 31 and 35 |
| 7 | cases | began | between | 36 and 40 |
| 3 | cases | began | between | 42 and 45 |
| 4 | cases | began | between | 46 and 56 |

Contrasting these two columns of statistics we are struck by two facts, viz., that men are more prone to remember the exact date when their dandruff began than is the case with women and that in these men and women seborrhea capitis appeared at an earlier period in the former sex than in the latter. Thus between the years 16 and 25 we find 61 per cent. of males developing their dandruff while in females at a similar epoch we find but 32 per cent.

ALOPECIA

Males, 127 cases.

| | | | | |
|---|---|---|---|---|
| 6 | cases | began | between | 10 and 15 |
| 30 | cases | began | between | 16 and 20 |
| 55 | cases | began | between | 21 and 25 |
| 14 | cases | began | between | 26 and 30 |
| 14 | cases | began | between | 31 and 35 |
| 2 | cases | began | between | 36 and 40 |
| 3 | cases | began | between | 41 and 45 |
| 2 | cases | began | between | 46 and 50 |
| 1 | case | began | at | 60 |

Females, 129 cases.

| | | | | |
|---|---|---|---|---|
| 7 | cases | began | between | 12 and 15 |
| 24 | cases | began | between | 16 and 20 |
| 21 | cases | began | between | 21 and 25 |
| 25 | cases | began | between | 26 and 30 |
| 25 | cases | began | between | 31 and 35 |
| 16 | cases | began | between | 36 and 40 |
| 5 | cases | began | between | 41 and 45 |
| 1 | each at | 46, 51, 54, 61, 63 and 68 | | |

In these columns it is seen that men and women are apparently equally impressed by the exact age at which their hair begins to fall but that between the ages of 16 and 25 alopecia develops in 67 per cent. of the men affected against 34 per cent. in the women.

Thus from these foregoing contrasting figures we learn that men are attacked much earlier than the opposite sex by alopecia furfuracea whereas women as a whole become the victims of alopecia, either simple or furfuraceous, more often than men, in fact, in the proportion of 56 to 43.

*Varieties, Distribution, and Subjective Symptoms of Dandruff and Loss of Hair in Alopecia Furfuracea*

| DANDRUFF | Cases. | ALOPECIA | Cases. |
|---|---|---|---|
| Slight in | 127 | Slight in | 67 |
| Abundant in | 199 | Marked in | 130 |
| Localized in | 83 | General in | 30 |
| Yellow-brown in | 56 | Principally on forehead in | 119 |
| Oily in | 78 | Principally on top of head in | 79 |
| Dry in | 53 | Principally on sides in | 13 |
| Granular in | 23 | Principally at tonsure in | 38 |
| Adherent in | 38 | Hair dry in | 37 |
| Loose and large in | 39 | Hair greasy in | 15 |
| Accompanied by pruritus in | 97 | Hair split in | 49 |
| Accompanied by burning in | 3 | Hair short in | 34 |
| Accompanied by hyperidrosis in | 30 | Hair coarse in | 8 |
| | | Hair fine in | 21 |

These figures require no elucidation. It is evident from their study that in alopecia furfuracea we may expect to encounter more often well-marked examples of seborrhea and of loss of hair than the reverse; that dandruff is usually general in distribution, while alopecia is generally localized; that dandruff is frequently accompanied by subjective symptoms and is often associated very strikingly with many changes in the texture of the hair as well as in its loss.

*The Treatment of Alopecia Furfuracea*

I fear that we must all agree that our therapeutic results in this disease are very disheartening. I tell all my patients who have noted this condition for more than a few months, and especially those whose forebears have been similarly affected, that a permanent cure is hardly to be hoped for, but that by long and continued perseverance on their part they may keep their scalps clean and delay the inevitable baldness for years.

The medical aphorism which tells us that therapeutic non-success may be judged by the multiplicity of the drugs recommended in a given disease is well emphasized in the present instance.

My armamentarium has included the following medicaments:

Washes, containing 70 per cent. alcohol, quinin, cantharides, capsicum, pilocarpin, chloral hydrate, tartaric and salicylic acids, phenol, formaldehyd, trikresol, anthrasol, and croton and turpentine oils.

Ointments, containing sulphur, salicylic acid, zinc oxid, resorcin, oil of cade, ichthyol, succus limonis, yellow oxid and ammoniated chlorid of mercury, orthoform and biborate of soda.

Soaps, containing betanaphthol and glycerin.

Internal medication, including iron, nux vomica, magnesium sulphate, dilute sulphuric acid, betanaphthol, malt, cod-liver oil, phenyl salicylate, ichthyol, salicin, thyroid extract and phosphate of soda.

Massage.

Despite this long list I practically confine myself to four prescriptions which I append:

| 1. ℞. | gm. or c.c. | |
|---|---|---|
| Acid. salicyl | 2 | or 3ss |
| Sulph. precip. āā | | |
| Petrolatum | 32 | ʒi |

M. S.—Ointment. Apply at night. Shampoo with a simple soap the following day.

| 2. ℞. | gm. or c.c. | |
|---|---|---|
| Pilocarpin nitrat. | .06 | gr. i |
| Quinin sulph. | 6 | or gr. x |
| Tr. canthar. | 10 | ʒiii |
| Tr. capsic. āā | | |
| Alcohol, 70 per cent. ad | 250 | fl. ʒviii |

M. S.—Wash for scalp. Apply in the morning.

| 3. R. | gm. | or | c.c. | |
|---|---|---|---|---|
| Acid tannic | 2 | \| | 26 | gr. xxxv |
| Chloral hydrate | 1 | \| | 66 | gr. xxvii |
| Acid tartaric | 2 | \| | | gr. xxx |
| Ol. ricini | 1 | \| | or | m. xv |
| Alcohol, 70 per cent. | 200 | \| | | fl. ℥vi |

M. S.—Wash for scalp. Apply in the morning.

| 4. R. | gm. | or | c.c. | |
|---|---|---|---|---|
| Hydrarg. chlorid. corrosiv. | | \| | 24 | gr. iv |
| Euresol | 8 | \| | or | ℥ii |
| Sp. formicarum | 30 | \| | | ℥i |
| Ol. ricini | 4-12 | \| | | ℥i-iii |
| Alcohol, 70 per cent. ad. | 250 | \| | | ℥viii |

M. S.—Wash for scalp (poison). Apply two teaspoonfuls in the morning.

The last of these four I hold easily first in its successful results. I associate its formula with Dr. G. T. Elliot, and it has proved a veritable godsend to me in treating many of these almost impossible cases. The essential feature in its composition is, I believe, euresol —the mono-acetate of resorcin. The smell of this salt is a very unfortunate factor, however, but one which the manufacturers have not been able to eradicate without markedly diminishing the value of the drug. The chloralhydrate wash I place second in efficacy.

Perhaps the most striking feature of these four prescriptions seems to be the absence of pure resorcin from their composition. I am free to confess that I never have been able to reduce its strength sufficiently to render it anything but an irritant to the scalp.

### *Results of Treatment Summarized by Age*

MALES, 200 CASES

Very good, 16 cases

| | | |
|---|---|---|
| At | 19 | 2 cases |
| Between | 20 and 25, | 4 cases |
| Between | 26 and 30, | 3 cases |
| At | 31 | 1 case |
| Between | 41 and 45, | 3 cases |
| Between | 46 and 50, | 2 cases |
| At | 58 | 1 case |

Slight, 58 cases

| | | |
|---|---|---|
| Between | 15 and 20, | 10 cases |
| Between | 21 and 25, | 20 cases |
| Between | 26 and 30, | 13 cases |
| Between | 31 and 35, | 6 cases |
| Between | 36 and 40, | 2 cases |
| Between | 41 and 50, | 4 cases |
| Between | 53 and 63, | 3 cases |

Good, 80 cases

| | | |
|---|---|---|
| At | 13 and 14, | 2 cases |
| Between | 16 and 20, | 10 cases |
| Between | 21 and 25, | 16 cases |
| Between | 26 and 30, | 23 cases |
| Between | 31 and 35, | 13 cases |
| Between | 36 and 40, | 9 cases |
| Between | 41 and 45, | 3 cases |
| At | 49, 56, 65 and 75, | 1 case |

Poor, 37 cases

| | | |
|---|---|---|
| At | 18 and 19, | 2 cases |
| Between | 21 and 25, | 14 cases |
| Between | 26 and 30, | 8 cases |
| Between | 31 and 35, | 7 cases |
| Between | 36 and 40, | 4 cases |
| Between | 42 and 46, | 2 cases |

Bad, 9 cases

| | | |
|---|---|---|
| Between | 20 and 26, | 4 cases |
| At | 32 | 2 cases |
| At | 38, 42 and 53, | 1 case |

FEMALES, 194 CASES

Very good, 17 cases

| | | |
|---|---|---|
| At | 13 | 1 case |
| Between | 26 and 30, | 4 cases |
| Between | 31 and 35, | 5 cases |
| At | 38 | 2 cases |
| Between | 47 and 50, | 3 cases |
| Between | 56 and 60, | 2 cases |

Slight, 53 cases

| | | |
|---|---|---|
| Between | 5 and 9, | 2 cases |
| Between | 13 and 15, | 4 cases |
| Between | 16 and 20, | 2 cases |
| Between | 21 and 25, | 11 cases |
| Between | 26 and 30, | 11 cases |
| Between | 31 and 35, | 7 cases |
| Between | 36 and 40, | 4 cases |
| Between | 41 and 45, | 3 cases |
| Between | 46 and 50, | 5 cases |
| Between | 51 and 55, | 2 cases |
| At | 70 | 2 cases |

Bad, 6 cases

| | | |
|---|---|---|
| At | 15 | 1 case |
| Between | 30 and 37, | 2 cases |
| Between | 43 and 48, | 3 cases |

Good, 93 cases

| | | |
|---|---|---|
| Between | 11 and 14, | 4 cases |
| Between | 16 and 20, | 7 cases |
| Between | 21 and 25, | 19 cases |
| Between | 26 and 30, | 15 cases |
| Between | 31 and 35, | 16 cases |
| Between | 36 and 40, | 12 cases |
| Between | 41 and 45, | 7 cases |
| Between | 46 and 50, | 4 cases |
| Between | 51 and 55, | 3 cases |
| Between | 57 and 60, | 3 cases |
| At | 63, 80, 83 each, | 1 case |

Poor, 25 cases

| | | |
|---|---|---|
| Between | 11 and 15, | 2 cases |
| Between | 16 and 20, | 2 cases |
| Between | 21 and 25, | 3 cases |
| Between | 26 and 30, | 6 cases |
| Between | 31 and 35, | 4 cases |
| Between | 36 and 40, | 2 cases |
| At | 50, 56, 60 | 2 cases |

These figures are comparatively small because many patients came but once and hence cannot be included in these lists.

From these figures it is seen that the prognosis in women is better than in men in the proportion of 56 per cent. to 48 per cent. These percentages are based on the "very good" and the "good" results in both sexes; and in addition we see that there were fewer "poor" and "bad" results in women than in the men in the proportion of 16 per cent. to 23 per cent. Therefore, we may encourage our feminine patients decidedly more than we can our masculine.

### SEBORRHEA

Included in this study of 794 cases were found 117 individuals who were the subjects of dandruff alone. It is rather a disconcerting fact to find so many examples of seborrhea capitis without resulting loss of hair, especially as this condition had existed for many years in many of these people—disconcerting because in this paper it has been inferred, at least, that dandruff is the most frequent cause of alopecia. Nevertheless, when the data are put into cold figures it will be found that these inferences are perhaps not wholly wrong. In the list there are 115 cases of alopecia simplex or a total number of 232 individuals in whom dandruff has played no part in the production of loss of hair. On the other hand, there is a total of 443 men, women, and children, a ratio of nearly two to one, in whom dandruff and loss of hair were present and in whom, by the figures in the great majority of instances, the seborrhea had preceded the alopecia for varying lengths of time.

To return to our cases of seborrhea simplex. Of the 117 examples 54 were males and 63 females, a ratio of 46 to 54—a distinct feminine preponderance and curiously enough corresponding absolutely exactly to our percentages of alopecia from various causes recorded in the early part of this communication (see above).

### *Age When Seborrhea Began*

Males, 32 cases

| | | |
|---|---|---|
| At | 1, 11, 14 each, | 1 case |
| Between | 16 and 20, | 8 cases |
| Between | 21 and 25, | 2 cases |
| Between | 26 and 30, | 10 cases |
| Between | 36 and 40, | 4 cases |
| Between | 53 and 60, | 4 cases |
| At | 65 | 1 case |

Females, 29 cases

| | | |
|---|---|---|
| At | 1, 7 each, | 1 case |
| Between | 10 and 15, | 7 cases |
| Between | 16 and 20, | 10 cases |
| Between | 21 and 25, | 5 cases |
| Between | 26 and 30, | 4 cases |
| At | 41 | 1 case |

These are rather small figures from which to draw conclusions but one is struck by the fact that dandruff comes on in childhood or in early adult life—71 per cent. in men and 96 per cent. in women exhibiting this symptom at or before the age of 30.

### *Incidence of Seborrheic Symptoms Other Than Dandruff*

For some years it has been my custom to regard seborrhea as merely the cutaneous evidence of some internal disorder and to look on acne vulgaris, acne rosacea, eczema seborrheicum and Fordyce's disease of the lips as similar expressions of the same general disturbance. So, from a study of these records, I find that in the 443 cases of alopecia furfuracea there were 57 individuals (a percentage of 12, consisting of 31 males, and 20 females) who exhibited one or more of these allied eruptions; while in the 117 examples of seborrhea simplex there were 29 men and 38 women (a total of 67, or a percentage of 57) with similar efflorescences.

### DYSPEPSIA

As to the nature of the fundamental disorder which, some think, lies at the bottom of these seborrheic symptoms we are decidedly at sea. Many of us, however, are wont to accuse digestive disturbances as possible sources of trouble and in this series of cases clinical evidences of dyspepsia have been found in the following percentages: in alopecia simplex 3; in alopecia furfuracea 8; and in seborrhea simplex 17. Surely, these are small crumbs of comfort to the believers in the digestive origin of these disorders.

*Regions Affected in Alopecia Areata and in Ringworm*

ALOPECIA AREATA, 86 CASES

| Scalp, 71 cases | | Ringworm, 9 cases | |
|---|---|---|---|
| Occipital, | 36 cases = 50 % | Occiput, | 5 cases = 55 % |
| Parietal, | 11 cases = 15 % | Top of head, | 2 cases = 22 % |
| Top of head, | 8 cases = 11 % | Sides, | 1 case = 11 % |
| Frontal, | 5 cases = 7 % | Beard, | 1 case = 11 % |
| General, | 11 cases = 15 % | | |

| Face, 21 cases | | |
|---|---|---|
| Beard, | 13 cases | = 62 % |
| Upper lip, | 5 cases | = 24 % |
| Eyebrows, | 3 cases | = 14 % |

No comment is necessary on these figures; they are very small but they speak for themselves. In scrutinizing my cases of alopecia areata I was struck by the marked incidence of an accompanying dandruff. This statement of course coincides with Sabouraud's dictum that pathologically and bacteriologically seborrhea always precedes or accompanies alopecia areata. Another fact impressed on my mind in the study of these cases is that one attack of alopecia areata very often leads to one or more successive outbreaks.

### SUMMARY

This then brings me to the end of these numerous columns of figures and deductions, which in conculsion I may summarize as follows:

1. Alopecia accompanied by dandruff is the commonest type of loss of hair.

2. Women are more prone to alopecia than men, in the proportion of 54 to 46.

3. The possible and principal causal factors of alopecia are heredity in 30 per cent., dandruff in 79 per cent., systemic depression in 20 per cent, fever in 11 per cent., and maltreatment of the scalp in 50 per cent.

4. Alopecia simplex develops before the age of 30 in 84 per cent. of the men, but in only 33 per cent. of the women.

5. Dandruff behaves in a similar manner and before the age of 25 attacks 61 per cent. of its future male victims but only 32 per cent. of its female.

6. The loss of hair in alopecia furfuracea comports itself with these previous two findings, appearing before the age of 25 in 67 per cent. of the men, but only in 34 per cent. of the women.

7. Summarizing paragraphs 2, 4, 5, and 6, we find that men are attacked earlier than women with alopecia and with seborrhea but that eventually women rather than men fall victims to these conditions.

8. When dandruff is present it is apt to be abundant rather than slight, oily rather than dry, and to be accompanied by itching.

9. With alopecia we find well-marked cases rather than mild ones, located in the great majority of the cases in the frontal and temporal regions and accompanied by hair which is apt to be dry, split, short and fine.

10. The drugs most successful in the treatment of dandruff and loss of hair are euresol, bichlorid of mercury, tannic acid and chloral hydrate.

11. The final results of treatment in these affections are almost disheartening, but judged from a temporary point of view, we may expect good or very good response in 48 per cent. of men and in 56 per cent. of women.

12. Seborrhea may exist for years without entailing any appreciable loss of hair; nevertheless, dandruff does seem to be followed or accompanied by alopecia twice as often as not.

13. Seborrhea simplex is a disease of childhood or early adult life, developing before the age of 30 in 71 per cent. of men and 96 per cent. of women.

14. Other seborrheas of the skin such as acne vulgaris, acne rosacea, eczema seborrheicum and Fordyce's disease, may accompany loss of hair and dandruff. Their percentages of concomitance, however, vary, and consist of 12 per cent. in alopecia furfuracea and 57 per cent. in seborrhea simplex.

15. Dyspepsia, on the other hand, exists in surprisingly small percentages in these cases, being present in only 3 per cent. in alopecia simplex, 8 per cent. in alopecia furfuracea, and 17 per cent. in seborrhea simplex.

16. From the preceding two paragraphs we may induce that seborrhea simplex is a truer form of dandruff than that accompanying loss of hair.

17. In alopecia areata and in ringworm of the scalp, the region most affected is the occipital.

18. In alopecia areata dandruff is a frequent accompaniment and we also find that one attack of the disease is apt to be followed by one or more later outbreaks.

259 Marlborough Street.

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### ABSTRACT OF DISCUSSION

DR. WILLIAM O. ROOP, Dayton: I indorse Dr. White's statement in regard to the value of euresol in treatment of these diseases of the scalp. I have frequently included it in my application in the treatment of these seborrheic conditions, and it has given me better results than some of the older remedies.

I have been consulted during the past year in several cases of alopecia areata, and in all I was particularly struck by the accompanying seborrhea; and while the recognized treatment has always been of a stimulating character, I felt that inasmuch as the etiology of alopecia areata is somewhat in dispute, that perhaps the same treatment as for seborrhea, and of a less stimulating character than that usually employed, might be successful. With that idea in view, I used a simple ointment of sulphur and resorcin, rubbing it into the patches at night, and in a number of instances I have been rewarded by a rapid return of hair in these bald areas. In other cases I have used treatment of a more stimulating character, such as applications of chrysarobin, phenol and the high-frequency current, but I was surprised to observe that my results were more rapid and satisfactory from use of the milder methods. This would suggest that alopecia areata may be of seborrheic origin since the two affections are so frequently concurrent and both yield to the same treatment.

DR. FRANK C. KNOWLES, Philadelphia: In anticipation that Dr. White would dwell on the subject of alopecia areata, I have reviewed the dispensary reports of four hospitals, the Pennsylvania, University of Pennsylvania, Howard, and Children's, with which I am connected. During the last five years I have seen 105 cases of this disease, twelve of this number being of the universal type. Alopecia areata of dental origin has recently been reported by several writers; Jacquet has written most extensively on this phase of the subject.

Rousseau-Decelle (*Bull. et mém. de la Soc. méd. des hôp.*, 1909, p. 62) has described several cases. Jourdanet (*Bull. de la Soc. francaise de dermat. et de syph.*, April, 1910), detailed an alopecia areata of the nape of his own neck following caries of a wisdom tooth. Traumatism seemed to have been etiologic in a few of my cases. In my collection of photographs are five pictures of a case of universal alopecia, in a boy of sixteen. The various stages and relapses of the disease, extending over a period of three and one-half years, are plainly shown. The last photograph, which was taken in May, 1910, shows complete restoration of all the hair.

DR. J. M. KING, Nashville: Dr. Whitfield, of King's College, London, who has the reputation of being a very careful and competent observer, has found some defect of vision in nearly all his patients with alopecia areata. I remember that whenever such a patient consulted him, he always had the vision tested. In treatment, the prescription that I have used, in alopecia of the seborrheal type has been made up of bichlorid of mercury, resorcin, chloral hydrate, tincture of cantharides, glacial acetic acid and alcohol. I first saw this used in St. George's Hospital, London, and I found that it acted very well indeed in a number of cases. I have not tried euresol, as this mixture has served me well in conjunction with sulphur ointment, used once every week or two weeks, the night before the application of green soap shampoo.

DR. ALFRED SCHALEK, Omaha: I was surprised to hear that seborrhea was an incurable disease, as my experience has not borne that out. I believe that it is curable in the majority of cases if the treatment is sufficiently prolonged. In one case of alopecia areata in which I applied the high-frequency current, the coincident seborrhea of a severe type from which the patient was also suffering largely disappeared, and from that time on I have used the high-frequency current in these cases with good results.

DR. J. B. KESSLER, Iowa City: The statement made by Dr. White that alopecia was more common in females than in males rather took me by surprise. My experience has been the reverse. In the hospital with which I am connected there are about 45 nurses in the training-school; after they have been in the hospital six or eight months many of them complain that they are losing their hair. Last summer, in connection with some of my colleagues, I took up this matter to see if the cause of this loss of hair could be determined. We investigated the cooking and the quality and quantity of the food, which was up to the average and sufficiently nourishing, and the only possible etiologic factor we could find was a lack of exercise in the open air. These nurses were on continuous duty for twelve hours and then returned to the Nurses' Home to sleep and study. It seems to me that this is the most prolific cause of alopecia in this class of people. I believe that women, as a rule, take better care of their hair than men, and when the hair becomes affected they are apt to follow the physician's directions more faithfully than men.

I have had some experience with euresol, and while it is very efficient, it is also very expensive, $1.00 an ounce making the price almost prohibitive. I have found, usually, in these forms of alopecia, that ointments are better in the beginning than solutions, and that the latter are more effective when they are preceded by the use of ointments. A favorite application of mine—although its odor is objectionable—is the oil of cade and sulphur. I first learned the value of this mixture while I was in Boston, working under the elder Dr. White. Euresol was brought to my attention through the kindness of Dr. Charles J. White; my results with this remedy, as well as those of my son, have been very satisfactory. I keep up the application for about a month, when the dandruff can be easily removed and the scalp will remain free from it for a reasonable length of time. There are some cases, however, and I have one under my observation at the present time, in which all methods of treatment are more or less unsatisfactory.

DR. ISADORE DYER, New Orleans: I want to sound one note in the danger of the use of the hair brush. I have preached for many years that no patient with dandruff will recover until the hair brush is discarded. There are only two ways of sterilizing it: One is by boiling and the second is by burning it. In the propagation of dandruff, the barber-shop is probably the chief offender, and I believe that an inspection of the usual ancient hair brush found in the wash-room of the country hotel or in any public place will demonstrate the destruction of the bristles of the brush itself by the micro-organism. The men who are interested in the work of this Section, as well as all dermatologists, should carry on this crusade against the hair brush as I have long done in my own city. I have frequently seen patients in whom the recurrence of dandruff invariably followed a visit to the barber shop. While on a visit aboard, after I had been free from dandruff for many years, I visited a barber shop and warned the barber not to use the brush. Just as he was completing his work, however, he forgot my instructions and gave one stroke with the hair brush. Five days later I again began to treat my scalp for dandruff. I cannot concede that the particular form of seborrhea which we call dandruff is incurable. I instruct male patients to wash their scalp every day; the female patients every other day, or at least twice a week. An experience extending over a number of year, has justified my faith in the use of resorcin, 2 to 5 per cent. solutions. Euresol has no advantage over this, in my own experience. In fair-haired patients, or those who have hair tinged with gray, the resorcin must be modified or some substitute employed. By neglecting this precaution, I have once or twice in my early experience inflicted on my patients hair which in color resembled the plumage of a canary bird. Chloral hydrate serves in these cases: it is an excellent stimulant to the scalp and an efficient antiseptic. I have never seen a case of alopecia areata which I believed to be parasitic, or in which I was not able to demonstrate a neurotic basis. I remember one case in which these bald patches recurred for nearly a year; the patient's occupation was that of a driver of a fire engine, and when he gave that up, his hair promptly and permanently returned. In the treatment of this condition, I regard the high-frequency current as more satisfactory than any other.

DR. M. L. HEIDINGSFELD, Cincinnati: The basis of our present treatment of alopecia rest on the experiments of Lassar and Bishop, which were carried on 30 to 40 years ago on mice, rabbits and other animals. For fifteen or 20 years the results of this work were unquestioned: when they were controverted by Blaschko, who maintained that alopecia was not a parasitic condition. Blaschko carried out a series of experiments similar to those of Lassar and Bishop, and his results were absolutely negative. Treatment of this condition at the present time is based largely on the theory that it is of parasitic origin. Personally, I concur in the belief that premature baldness is not a parasitic condition. I think that too much manipulation of the scalp by rubbing and massaging is injurious both in men and in women. Premature baldness is accompanied by four cardinal symptoms, i. e., itching, dandruff, a dry or oily condition of the scalp, and, lastly, loss of hair. Dandruff is only a precursor of the loss of hair, and in order to prevent the occurrence of the latter, we must control the itching, the dandruff and the abnormal condition of the scalp. Treatment must be directed against these special conditions. Resorcin, if too strong or too frequently applied, will produce an oily condition of the scalp. An oily scalp may be rendered less oily, or even dry, by substituting colloidal sulphur or nascent sulphur, after the formula of Radcliffe Crocker for the resorcin.

DR. WILLIAM FRICK, Kansas City: In the alopecia accompanying syphilis the loss of hair is not always limited to the scalp. I recently saw a case in which the alopecia of the scalp was not complete, but there was a complete loss of the eyebrows and eyelashes.

DR. WILLIAM A. PUSEY, Chicago: One factor in regard to alopecia has not been mentioned and is worthy of consideration, particularly with the present fashion, and that is, excessive exposure of the scalp to sunlight. We are all familiar with the middle-aged man riding horseback or playing golf bareheaded in the forlorn hope of bringing his hair back. For many years I have regarded this excessive expos-

ure to sunlight as an exciting factor in the production of alopecia. I have noticed that many of these patients apply for treatment in the autumn, after they had gone bareheaded throughout the summer, and I was also led to this idea through the analogy of the effect of the sun's rays with those of the *x*-rays. We know that with highly actinic energy we can produce baldness, and I am inclined to believe that free exposure to sunlight will have the same effect. This is probably only one of many factors, and in my opinion alopecia is a condition of complicated etiology; it is not a well-grounded view that all alopecias or nearly all are parasitic.

I have never been able to convince myself of the value of many of the remedies that have been mentioned in the treatment of this condition. This is true of resorcin, with which I have had a very unsatisfactory personal experience. I know of only two remedies that have a definite value in the treatment of alopecia, namely, tar and sulphur. I have used alcohol in various combinations, and it is my impression that about as much good is accomplished by alcohol alone as when it is combined with other remedies.

DR. J. GRINDON, St. Louis: It is a popular notion that frequent washing injures the scalp, but practically, I have observed that those who are the most inveterate and constant in the practice of washing the scalp keep their hair as long as anybody else, and I always tell my patients that they can wash their heads as often as they please. Nor can I understand how the application of soap and water to the surface of the scalp can have any bad effect on the growth of the hair. In regard to medication in these cases, I have had very good results from the use of resorcin, and I agree with Dr. Kessler that solutions are usually more effective when they are preceded by the use of ointments. One of my favorite prescriptions is composed of petrolatum, salicylic acid and sulphur. I tell my patients that this application is disagreeable, but that it will probably not be necessary to continue it for longer than a month. After this I use resorcin, usually a 2 per cent. solution, either alone or in combination. In cases of well-established seborrheal alopecia I tell my patients that I do not believe that I shall ever be able to give them an actual permanent cure, but that I hope to bring about a symptomatic cure, providing they keep up the treatment indefinitely. As long as they live they will be obliged to pay some attention to the scalp in order to avoid a recurrence. So far as the effect on the scalp of exposure to the rays of the sun is concerned, I must agree with Dr. Pusey on theoretical grounds. The comparative frequency with which cases of loss of hair are observed in the autumn I attribute not to the effect of the sun's rays, but rather to the fact that there is natural loss of hair at that period of the year, whether one plays golf bareheaded or not. The *x*-ray, in small doses, causes a growth of hair, while large doses produce a loss, and the actinic rays from the sun in such doses as we get them, probably stimulate the growth of hair. Our ancestors, who wore no clothing at all, had hair all over their bodies.

DR. J. B. KESSLER, Iowa City: I have in mind a case of universal alopecia in a boy of 18 in whom the condition has now lasted about 2 years. With the exception of two or three little stubs, his body and scalp are completely bare. He has beeen examined by a neurologist and his blood has been examined with entirely negative results. I have been unable to find the cause of the alopecia or a remedy for it.

DR. FRANCES ROWLEY, Galvesten: Has anyone studied this matter with reference to the diet of the patient? Has the nitrogenous metabolism been investigated, or would these patients receive any benefit by increasing the sulphur?

DR. C. J. WHITE, Boston: The diversity of opinions expressed well illustrates the fact that we really do not know anything about this subject scientifically. We have our pet theories, and we reason largely by analogy. I agree with Dr. Pusey in regard to the effect on the hair of over-exposure to sunlight. I believe that the scalp and hair are supposed to have a certain amount of grease, and if we expose the scalp to the sun, we remove the greasy element and the hair becomes bleached. For the same reason, constant washing of the head or over-treatment of the scalp is equally disadvantageous. This history of too much sun or too much washing I have frequently obtained from persons who were prematurely bald.

My colleagues and I in Boston have never derived much benefit from the use of resorcin in this disease. If it is applied strong enough to do any good, it inflames the scalp. As to a possible deficiency of sulphur in the economy, to which Dr. Rowley referred, I do not know whether any scientific work has been done in that direction, but I have given that drug internally in one of its several forms without resulting benefit.

I tell my patients to use a hair brush as little as possible unless it is a clean one, and instruct them to sterilize it by placing it in the sun for a few hours at least once a week. I agree with Dr. Dyer that the hair brush is a very common cause of the persistence of dandruff. In treatment in general, I have tried all the various ointments, and in my hands they did not work so well as the two lotions that I have described. I believe that women are affected with alopecia oftener than men, but there are cases in which men feel more keenly than women the loss of their hair. As to the various etiologic factors of alopecia areata referred to by Dr. Knowles, I do not think we know the true cause of the affection, but I believe that in some specific organism plus the stimulus of a nervous breakdown or sudden shock or the debilitating effect of slow sepsis from carious teeth we have a reasonable theory of the origin of this disease.

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# THE EXTERNAL PREPARATIONS OF THE U. S. P. AND THE NATIONAL FORMULARY *

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CHICAGO

## THE U. S. PHARMACOPEIA

The external preparations of the U. S. P. comprise some 55 articles representing the following classes:

| | |
|---|---|
| Unguenta | Linimenta |
| Cerata | Collodia |
| Suppositoria | Cataplasmæ |
| Oleata | Chartæ |

Previous to the last revision these preparations were designed from a purely pharmacal standpoint: that is, the selection of the vehicle—the forming substance—was governed primarily by pharmaceutic considerations, so as to insure stable and otherwise superficially satisfactory preparations.

Having immediate charge of these preparations in the last revision, it was our good fortune to receive suggestions from many medical specialists, ophthalmologists, gynecologists and dermatologists, such as Dr. W. L. Baum of this Section, and the formulas for these preparations were for the first time revised on a therapeutic basis. Since they have proved uniformly satisfactory pharmaceutically, it might be well here briefly to consider these preparations according to their classification and therapeutic groupings, in order to determine whether practice has demonstrated the correctness of the theoretic considerations on which they were severally formulated, and it is hoped that the fullest discussion and criticism may obtain among those who use these preparations.

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* The author of this paper, being now engaged in the revision of the U. S. P. and the N. F., desires physicians to report to him any criticism on these preparations, particularly the newer ones taken from the British Codex, and also any additions that might be sufficiently valuable or extensively used to warrant admission to either the U. S. P. or the N. F. Address C. S. N. Hallberg, 74 E. Twelfth Street, Chicago, Ill.

* Read in the Section on Dermatology of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

UNGUENTA—OINTMENTS

Impalpable mixtures of medicinal agents and a fatty vehicle, soft solids, melting at the body temperature, intended for external application or inunction. They may be grouped therapeutically according to the function of their respective vehicles:

1. *Epidermatic.*—Non-penetrative, non-absorptive, protective, antiseptic, etc.

Vehicles: Soft paraffin (petrolatum, etc.).

| PREPARATION | PRINCIPAL INGREDIENT | PROPORTION |
|---|---|---|
| Unguentum acidi borici— | boric acid | 10% |
| phenolis— | phenol (carbolic acid) | 3% |
| zinci stearatis— | zinc stearate | 50% |
| hydrargri diluti— | mercury | 33% |

2. *Endermatic:* Semipenetrative or semiabsorptive emollient, nutritive, astringent, etc.

Vehicle: Animal or vegetable fats, oils or waxes—lard, suet, almond oils, hydrated wool fat.

| PREPARATION | PRINCIPAL INGREDIENT | PROPORTION |
|---|---|---|
| Unguentum acidi tannici— | ac. tannic, | 20% |
| aquæ rosæ— | rose water, | 20% |
| belladonnæ— | ext. belladonna, | 10% |
| chrysarobini— | chrysarobin, | 5% |
| diachylon— | lead plaster, | 50% |
| hydrargyri— | mercury, | 50% |
| hydrargyri nitratis— | mercury nitrate, | 10% |
| iodi— | iodin, | 4% |
| iodoformi— | iodoform, | 10% |
| picis liquidæ— | tar, | 50% |
| potassii iodidi— | potass. iodid, | 10% |
| stramonii— | ext. stramoni, | 10% |
| sulphuris— | sulphur, washed, | 15% |
| veratrinæ— | veratrin, | 4% |
| zinci oxidi— | zinc oxid, | 20% |

Vehicle: Hydrated wool fat and petrolatum, equal parts.

| | |
|---|---|
| Unguentum hydrargyri ammoniati, | 10% |
| hydrargyri oxidi flavæ, | 10% |
| hydrargyri oxidi rubri, | 10% |

3. *Diadermatic.*—Penetrative or absorptive—systemic or constitutional.

Vehicle: Hydrated wool-fat:

Lanoleum hydrargyri—50 per cent., not official.

CERATA—CERATES

Mixtures of fats, waxes, sometimes resin, of hard consistence, softening by heat, readily spread on cloth, adhering to the part applied. To serve as protective dressing or to produce antiseptic, astringent or vesicating effects.

| PREPARATION | PRINCIPAL INGREDIENT | PROPERTY |
|---|---|---|
| Ceratum— | | protective. |
| camphoræ— | linim. camphor, 10% | antiseptic. |
| plumbi subacetatis— | liq., 20% | astringent. |
| resinæ— | | discutient. |
| resinæ compositus— | | discutient. |
| cantharides— | 32% | vesicant. |

EMPLASTRA—PLASTERS

Mixtures of medicinal agents with lead plaster, rendered pliable by admixture with rubber, hard solid, readily softening so as to be spread on cloth or fabric, adhering to the skin-part to which it is applied. To serve as protective or supportive or to exercise specific effects.

| PREPARATION | PRINCIPAL INGREDIENT | PROPERTY |
|---|---|---|
| Emplastrum plumbi— | diachylon, lead oleate. | |
| adhesivum— | rubber, petrolatum, 2% | |
| belladonnæ— | ext. belladonna, 30% | anodyne. |
| capsici— | oleoresin capsicum | rubefacient. |
| hydrargyri— | mercury, 33% | alterative. |
| opii— | ext. opium, 6% | anodyne. |
| saponis— | soap, 10% | stimulant. |

The plasters of the present Pharmacopeia, all containing adhesive plaster as the vehicle, easily prepared and readily spread, are a vast improvement over the former "pitch plasters." Being endermatic, they exert the action of the respective medicinal agents, in which respect they differ from the commercial rubber plasters which are simply adhesive, do not permit any penetrative effect and are therefore therapeutically inert.

SUPPOSITORIA—SUPPOSITORIES

Mixtures of the medicinal substances and a fatty or gelatinous vehicle readily fusible at the body temperature and made into different shapes for introduction into the various orifices of the body.

Three different kinds as to size and shape of suppositories are official.

1. *Rectal.*—Cone-shaped, weighing 2 gm.; vehicle theobroma oil.

2. *Urethral.*—Pencil-shaped, weighing from 1 to 2 gm.; vehicle glycerinated gelatin or theobroma oil.

3. *Vaginal.*—Subglobular or ovoid, weighing from 4 to 10 gm.; vehicle glycerinated gelatin or theobroma oil.

There are, besides, glycerin suppositories gelatinized by soap to permit of being made into dosage form for facile introduction in the rectum, there to act as a solvent and thus produce prompt evacuation. The true suppositories, on the other hand, being analogous to ointments or cerates, present to the surfaces the most intimate admixture of the various antiseptic, astringent, anodyne, etc., agents for the most favorable action on the parts to which applied.

While the selection of theobroma oil as a vehicle for rectal suppositories cannot be improved on, a non-fatty vehicle is preferable for those intended for urethral and vaginal use. Glycerinated gelatin is therefore given the preference, although the choice of also using theobroma oil is left free to the practitioner.

The reason for this distinction in the vehicle for these different kinds of suppositories is based on the information of clinical observers that, while the rectal secretions are normally alkaline and therefore a fatty vehicle is appropriate, the secretions of the genito-urinary organs being normally acid, a fatty vehicle would be less desirable and hence the choice of a non-fatty vehicle would be better adapted to the mucous surfaces under such conditions.

The choice of glycerinated gelatin for this purpose leaves nothing to be desired from a pharmaceutic standpoint, the suppositories being soft and flexible and owing to the great proportion of glycerin contained (about 50 per cent.) retaining their solubility for any reasonable length of time. With the use of the official gelatinum glycerinatum, these suppositories are readily and quickly prepared, the only requirement being the variously shaped molds.

Whether or not this distinction in vehicle in the different kind of suppositories is really of therapeutic advantage has not been so far generally demonstrated, since seldom is any other vehicle than theobroma oil specified, no matter what kind of suppositories are required. It is hoped that this question will be discussed so that the Committee on Revision will have the benefit of the experience of clinicians.

OLEATA—OLEATES

The official oleates are formed by direct union of the base with oleic acid. They belong to the so-called "insoluble soaps." To the best of our knowledge oleates are only endermatic and not diadermatic; that is, they penetrate into the skin but do

not pass through so as to have systemic effect. The following official are saturated oleates:

Oleatum hydrargyri—(25 per cent. Hg oxid).
Oleatum quininæ—(25 per cent. quinin alkaloid).

The following are solutions of alkaloidal bases in oleic acid in excess. In the first three olive oil is substituted for about one-half the amount of oleic acid. The advantage of this has been questioned and deserves clinical observation.

| | | | |
|---|---|---|---|
| Oleatum atropinæ, | 2% | Oleatum veratrinæ, | 2% |
| Oleatum cocainæ, | 5% | Oleatum aconitinæ, | 2% |

Zinc oleate is a fine dry powder of a soapy feel valuable as a mild antiseptic and astringent "dusting powder."

### COLLODIA—COLLODIONS

Solutions of medicinal substances in collodion, a solution of pyroxylin in ether-alcohol, which being applied with a pencil quickly dries and leaves an impervious film.

The following are official:

| | | |
|---|---|---|
| Collodium— | collodium flexile— | |
| acidi tannici— | (styptic), | 20% |
| cantharidatum— | (blistering), | 60% |
| iodatum— | (iodized), | 5% |
| collodium iodoformatum— | (iodoform), | 5% |
| salicylatum comp.— | (corn collodium), | |
| tiglii— | (croton oil), | 10% |

## THE NATIONAL FORMULARY

While not so important a work as the U. S. P., the National Formulary contains many preparations extensively used by physicians; and now is the time to make such additions and corrections as may be advisable, since its revision is now proceeding.

The following several classes of preparations for external or local use are included and it is the desire of the Committee to be informed by physicians of what criticism they would make on these various formulas; also what other preparations they would propose for admission.

### GLYCEROGELATINA—GLYCERO-GELATINS

Medicinal agents incorporated with a 25 per cent. solution of gelatin in glycerin. Especially useful as a dressing where bandages are inadmissable. Prepared from the official gelatenum glycerinatum by simply incorporating the medicinal agent, first levigated with glycerin, with the melted glycerogelatin. The jelly is melted by placing the container in hot water, when it is applied with a camel's-hair pencil.

| | | |
|---|---|---|
| Glycerogelatinum— | acidi salicylici, | 10% |
| | iodoformi, | 10% |
| zinci durum— | firm zinc glycerogelatin. | |
| zinci mollis— | soft zinc glycerogelatin. | |

### PASTA DERMATOLOGICA—DERMATOLOGIC PASTES

Ointment-like mixtures of starch, dextrin, zinc oxid, calcium carbonate or sulphur, made into a paste with glycerin, soft soap, petrolatum, lard or other fat, with antiseptic or astringent agents.

Pasta dextrinata—Equal parts dextrin, glycerin and water.

| | | |
|---|---|---|
| ichthyoli— | Unna—ichthyol, | 25% |
| naphtholi—Lassar— | beta-naphthol, | 10% |
| resorcinolis mitis—Lassar— | resorcinol, | 10% |
| zinci—Lassar— | zinc—salicyl, | 2% |
| zinci mollis—Unna— | soft zinc paste. | |
| zinci sulfurata—Unna— | sulphur præcip., | 10% |

### STILI DILUBILIS—UNNA PENCILS

| | |
|---|---|
| Stilus acidi salicylic dilubilis, | 10 per cent. |
| Stilus cocainæ dilubilis, | 5 per cent. |

### UNG. RESORCINI COMP.

This ointment, containing resorcinol, zinc oxid and bismuth subnitrate, each 6 parts, and oil of cade 12 parts, is extensively employed. The preparation discolors, but when the oil of cade is replaced by oil of birch (ol. ruscae) 6 parts (instead of 12 parts) a superior ointment is obtained. The opinion of physicians is decided on this.

### UNGUENTA EXTENSA—SALVE-MULLS

Medicated cerates to be spread on gauze for continuous application to avoid maceration.

| | |
|---|---|
| Ung. extensum zinci, | 10% |
| hydrargyri chloridi corrosivi, | 2 per mille |
| salicylatum, | 10% |
| creosoti salicylatum. | |

The following ointments of the British codex may also be of service:

Unguentum capsici (24 per cent. capsicum infused).
creosoti, 10 per cent. petrolatum.
suprarenalin, 10 per cent. suprarenalin.

Petrolatum combined with ammonia soap is used as a vehicle under the following titles:

Petrolatum saporatum liquidum—liquid petrox.
Petrolatum saporatum spissum—solid petrox.

These are rarely used except as vehicles for various potent agents; iodin, phenol, etc. The Latin title is unwieldy and becomes more so when linked to a specific name.

### PAROGEN

Under the title "Parogen" the British Codex contains the following formula containing 50 per cent. less liquid paraffin (liquid petrolatum) than that of the present N. F.

Parogenum—parogen: Syn. liquid parogen; vaso-liniment; oxygenated paraffin. Liquid paraffin 40; oleic acid 40; alcohol ammon. (5%) 20. Mix and agitate until a clear solution is obtained.

Also the following combinations, all made with the liquid parogen:

Parogen chloroformi camphoratum—camphorated chloroform parogen.
Camphor 37.50; chloroform 25, dissolve, add parogen 37.50.

Parogenum creosoti—creosote parogen—
Creosote 5; parogen 95; mix them.

Parogenum empyreumaticum—empyreumatic parogen.
Oil of cade 25; parogen 75; mix them.

Parogenum eucalyptolis—eucalyptol parogen.
Eucalyptol 20; parogen 80; mix them.

Parogenum guaiacolis—guaiacol parogen.
Guaiacol 20; parogen 80; mix them.

Parogenum hydrargyri—mercury parogen.
Mercury 30; wool fat 15; triturate till metallic globules cease to be visible, then add thick parogen, 55.

Parogenum ichthamolis—ichthamol parogen.
Ammonium ichthosulphonate 10, parogen to 100, dissolve and strain after standing.

Parogenum iodi—iodin parogen.
Iodin 10; powder and triturate till dissolved in oleic acid 40; mix with liquid paraffin 40 per cent. then alcohol ammon. (5 per cent.) 10.

Parogenum iodi dilutum—diluted iodin parogen.
Iodin parogen 60; parogen 40; mix.

Parogen iodoformi deodoratum—deodorized iodoform paraffin.
Iodoform 3, eucalyptol 3, parogen to 100. Dissolve iodoform in the parogen by warming cautiously; then add the eucalyptol.

Parogenum mentholis—menthol parogen.
Menthol 2, parogen to 100; dissolve by warming cautiously.

Parogenum naphtholis—naphthol parogen.
Naphthol 10; parogen to 100; triturate till dissolved.

Parogenum picis—tar parogen.
Tar 25, parogen to 100; mix them.

Parogenum salicylatum—salicylated parogen.
Salicylic acid 10, parogen to 100; powder and triturate till dissolved.

Parogenum sulphuris—sulphur parogen.
Sulphur subl. 3, linseed oil 37; dissolve by aid of heat; then mix with parogen to 100.

Parogenum sulphuris compositum—compd. sulphur parogen.
Sulphur parogen 10, oil of cade 10, thymol 0.3, eucalyptol 3, oil of turpentine 30, parogen to 100. Dissolve the thymol and eucalyptol in the oil, mix with the parogen.

Parogenum terebinthina—turpentine paraffin.
Venice turpentine fact. 20, parogen to 100; mix them.

Parogenum spissum—thick parogen.
Hard paraffin 12, liquid paraffin 48, oleic acid 30, alcohol ammon. (5 per cent.) 10. Melt the hard paraffin; add the liquid paraffin, then the oleic acid and the alcohol and continue the heat on a water-bath until the product weighs 90.

The following single generic names are suggested for the same reasons as was the parogenum for petrolatum saponatum. If physicians are expected to use these preparations, the generic titles must be composed of single words otherwise when the specific name is added they become too cumbersome.

LANOLIMENTA—LANOLIMENTS

Lanolimentum mentholis—menthol lanoliment.
Menthol 5, hydrous wool-fat to 100; mix.

Lanolimentum mentholis salicylatum—salicylated menthol lanoliment.
Menthol 5, methyl salicylate 10, hydrous wool-fat to 100; mix.

Paraffinoleum mentholis—menthol paraffinol—liquid petrolatum and menthol.
Menthol 2, liquid petrolatum to 100. Mix and strain if necessary.

Paraffinoleum eucalypti—eucalyptus paraffinol.
Oil eucalyptus 5, liquid petrolatum to 100; mix.

Paraffinoleum thymolis—thymol paraffinol.
Thymol 1, liquid petrolatum to 100. Dissolve by trituration in a warm mortar.

Paraffinol phenolis—phenol paraffinol.
Phenol cryst. 1, liquid petrolatum to 100. Dissolve by trituration in a warm mortar.

74 East Twelfth Street.

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# MEDICO-PHARMACEUTICAL ETHICS *

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The heading of this paper sounds more like the title of a book on the subject than that of a more or less haphazard essay, but no other short caption suggested itself for a treatise on the proper attitude and mode of reciprocal action that should exist between the members of the professions of medicine and pharmacy.

No historical survey of the origin of either one of these callings from the other will be attempted, for some medical writers declare that pharmacy originally sprang from the forced surrender of the custom of primeval healers of preparing their own drugs, in order to keep abreast of more related advances of their work, and the pharmacists retort that there were no doctors at first, the healing art having been practiced by the ancient botanists, from whom pharmacy, more than medicine, can claim heritage. Nor will the subject be treated academically. An effort will be made to point out and describe some of the real and imaginary evils that have crept into the practices of medicine and pharmacy, which make pharmacists and physicians antagonistic professionally to one another, and to suggest how these unethical errors can be corrected.

## COMMON VICES

I shall get at the substance of the matter instantly by stating that there are some evils that are common to both professions, among which may be mentioned, first, the payment of percentages by pharmacists and physicians for patients referred; second, the recommendation of a certain physician or drug-store because of this commission; and, third, the expression of derogatory opinions against the members of the medical and pharmaceutic fraternities, because of the facts that, on the one hand, the physician in question will not send patients or pay the commissions others do, and, on the other, the pharmacist is not one from whom the physician can expect a percentage from his prescriptions.

There is only one side to the first of these three evils and that is this: The payment of a percentage by a pharmacist to a physician for prescriptions directed to his store is wrong, as it is practically collusion between the prescriber and dispenser in an effort to overcharge the patient. It only means that the patient is going to be forced to pay an additional amount to cover the commission paid. A physician should charge a sufficiently remunerative fee to satisfy himself financially and should not expect in addition a share of what the patient is paying (supposedly) for his medicine. It is equally unjust for the pharmacist to expect a commission for work referred to the physician, as this recommendation would then be made mostly for gain and, in this way, only physicians paying this commission, rather than those who are capable, would be named to the inquiring. The recommendation of a certain physician by the pharmacist should always be made because it is thought that that physician is the best fitted to advise the patient; and the medical man can feel justified in referring the sick to particular drug-stores only when he is of the opinion that in these places his prescription will be more accurately filled than in other pharmacies; in this way using his expected care that incompetent men will not be given a chance to make any errors.

The last of these common faults, that of making belittling remarks about either certain physicians or certain druggists who do not further the interest or meet the approbation of a member of either profession, is wrong because the physician or pharmacist often is mistaken in his opinion, and, again, because it may shake the confidence of a patient in his physician when the latter is censured and therefore tend to lessen the likelihood of the patient's cure. As pharmacists or physicians, we should not speak against one or the other. We can and should refuse to recommend to patients anyone who is incompetent, but should not speak evil of him. We only nullify each other's efforts in performing the noble work of aiding the sick when we speak against members of either profession. Let us recommend certain physicians or certain pharmacists when asked or when we think it necessary, but let it always be for meritorious reasons and never with the consideration of possible gain or revenge in view. In this way, each will reap his just reward and medicine and pharmacy will move on, hand in hand, in the work of humanity to which they should be devoted.

Let us now take up the consideration of evils confined almost entirely to one or the other profession, and we shall find much to speak about. The pharmaceutic evils are principally drug-store prescribing, substitution, the pushing of patent medicines, bad dispensing, and

* Read at the Annual Meeting of the California Pharmaceutical Association, San Francisco, May 19, 1910, at which the San Francisco County Medical Society was present by invitation.

the practice of exposing mistakes supposed to have been made by prescribers. The medical profession is called on to defend itself against the charges of dispensing medicines, deficient knowledge of material medica and prescription-writing, which is responsible for the ordering of unsightly mixtures, overdosage and the prescribing of patent and proprietary medicines, as well as special makes of official preparations, and the custom of blaming the pharmacists for failure to obtain certain therapeutic results, a supposed color, odor or taste of a mixture prescribed. These topics cover the sources of complaint usually found when a threatened breach is wedging in between the professions, but do not include matters that often cause internal dissension between pharmacists themselves, like higher educational requirements, cut-rate methods and side-lines; or matters confined within medical ranks, such as advertising and specialization; or the subject of renewals of prescriptions, the ownership of the latter and the matter of the enforcement of the pure drug acts, which are regulated by law in many states.

### PHARMACEUTIC TRANSGRESSIONS

Taking up the pharmaceutic vices, one by one, let us define them and see how far—if at all—they are permissible, and offer some suggestions for their correction or regulation.

*Drug-Store Prescribing.*—In the literature and by personal experience, I find that most of the antagonism felt toward the pharmacist by medical men is on account of drug-store prescribing, which includes treatment over the counter and in the back room. That it is wrong even to the patient, for the prescriptionist to attempt to diagnose or cure diseases, either by prescribing medicines or by giving treatments, as in the form of irrigations in venereal diseases, there is no doubt. The argument often advanced that this practice results in a financial loss to the physician as well as to the druggist, is not the strongest objection to this evil. For no one who realizes how difficult it often is for the skilled physician to diagnose and treat the symptoms of which the average patient complains can fail to see how impossible it is for the pharmacist, who has received no special training in these matters. Consider how misleading a symptom must be to one who knows nothing about reflected pain or who has never heard of an extra-uterine pregnancy! "But," some will say, "that does not apply to diseases which are self-evident, as for example, gonorrhea or syphilis." It does not make any difference, for it is often just as hard to treat these diseases successfully as it is to diagnose others. This statement is borne out by the experience of eminent gynecologists who have found that about 12.5 per cent. of all operations performed on women are caused by uncured gonorrhea affecting their husbands, who often were assured that they were cured and also by the startling fact that this disease is responsible for 80 per cent. of deaths from disorders peculiar to women.

But how far can the pharmacist go before he can be deemed guilty of intruding on the physician's domain? This is a limit on which not all agree. Some say that a prescriptionist should never give medicine without an order from a physician, but is this practical? It seems that the best compromise that has been offered is that a pharmacist should never try to diagnose a case, but should explain to a patient that the best thing would be to see a physician, as his opinion may be necessary, and then, if the customer refuses to do this, the druggist should give some unharmful mixture for the symptom complained of with final directions to see a physician if not relieved. A member of the pharmaceutic profession is presumptuous when he fails to tell the sick that pharmacists are not able or taught to diagnose diseases and that it is the physician's work to do so, just as it is presumptuous for the physician to give a price on prescriptions without knowing how they are figured.

*Substitution.*—Substitution or omission of ingredients in a prescription is unjustifiable and criminal. The physician and patient have a right to insist that the medicines prescribed are dispensed and anyone who wilfully deals out one substance for another or who leaves out any of the contents ordered in a prescription is deserving of the bitterest condemnation from both professions. But there is an aspect to this subject not often considered by my exacting colleagues, and that is the custom of specifying the manufacturer's name when official preparations are prescribed. In rare cases this is along the lines of safety, but it can and is often carried out too far. For example, let me tell a story which Prof. W. M. Searby narrated to me, touching on this point. A pharmacist who had a large number—I think it was fifteen—fluidextracts of ergot, was handed a prescription in which a new inferior make was specified. This was an urgent case and the medicine was needed, for the messenger said the physician was waiting to use the ergot on the patient, who was suffering from a postpartum hemorrhage. So the pharmacist gave an excellent preparation of the drug instead of the one called for, which he did not have. Was he right in what he did? He certainly was, for it might have been the cause of a woman bleeding to death if, actuated by exaggerated ideas of avoiding substitution, he had given back the prescription and not dispensed what he did. Many other cases like the above happen and a drug-store must be kept stocked with many makes of certain preparations which are exactly the same in value. It would be better for physicians to specify the maker's name only when there is some good reason, leaving the pharmacist, who is better trained to choose between good and bad preparations, responsible for the quality of all drugs, as he is for ingredients of unspecified manufacture.

*Crude Dispensing.*—By the evil of bad or crude dispensing is meant the turning out of mixtures of offensive appearance and taste and doubtful therapeutic value because of inability to compound properly. Every physician has noticed this fault when for some reason he has had to write some prescription, not simple to dispense, a second time for the same patient, who has gone to a different pharmacist each time. I am not referring to those cases in which the trouble is due to the inability of the physician to prescribe, but to those instances in which in one drug-store the pharmacist will understand how to combine the ingredients ordered and turn out an excellent preparation, while at other places the compounding is done by men who do not know the proper way and hand a patient an abominable combination. So much for bad dispensing.

*Exposing the Mistakes of Physicians.*—This is just the course which the pharmacist should not take, considering how human it is to make blunders, especially in the crucial situations in which the prescriber often finds himself. Neither by word nor by sign should the patient know of any supposed error, but the pharmacist should communicate with the physician about the matter and, if this is not possible, the correction should be made by the prescriptionist and the physician be positively informed. It is wrong to be apathetic and to return the prescription, as the mistake might be overlooked in

another place and a fatality result. It follows that a physician should always act in a gentlemanly manner when called on to correct a mistake, and should feel that a dispenser is acting along the lines of carefulness and safety in communicating with the physician even if the error can be shown to be only apparent.

*Pushing the Sale of Patent Medicines.*—The matter is one almost wholly pharmaceutic. Let us pass it by thus: Most of the prominent pharmacists would gladly do away with this feature of their business if it meant the abolishment of the public evil of self-medication, but, as it would be taken up by department-stores and the business increased rather than lessened, there is no reason why they should not keep these nostrums. When it is considered also that often even physicians prescribe these remedies, it seems unreasonable to expect a drug store to do without them. I believe, however, that the pharmacist should never recommend any of these preparations, but should furnish them only when called for. For druggists to push certain compounds of their own manufacture, like insect-destroyers and spring medicines for which customers rarely apply to a physician, is not much of a breach, especially when those are recommended to be "just as good" or better than widely advertised, but not so effective, nostrums. Care in proclaiming the virtues of these preparations should be exercised and no exaggerations indulged in that might offend broad-minded and intelligent physicians—no matter how great an impetus would be given to these goods.

## MEDICAL EVILS

And, now, let us review the transgressions of which the medical profession seems to be guilty and reason out how much can be said to be excusable.

*Dispensing by the Physician.*—Dispensing at the office and at the patient's house is the oldest charge hurled at physicians. Let it be understood at the start that no reasonable pharmacist can deny that this practice is in order when immediate medication is needed or when the patient lives at a distance too remote from a drug-store. It was said in defending the physician against exposure of his errors that the nature of his work is such that mistakes often creep into his prescriptions; therefore the fact is evident that somebody must act as a checker in dispensing his orders, and who is better qualified than the pharmacist? Many times also the physician is wrong in his idea of the dosage of some powerful drug appropriate for the occasion, but rarely used, and it is here that the knowledge of posology taught in the college of pharmacy should be brought into play. The pharmacist also has a better opportunity to make sure, as he can look these matters up in the books on materia medica without exciting suspicion. It follows also that the physician cannot dispense as competently as the pharmacist, whose ability to do so is dependent on his knowledge of and experience in mixing drugs. Therefore, a physician who makes it a practice to dispense his own prescriptions acts detrimentally to his patient, the pharmaceutic profession and his brother practitioners, in the latter case because of the unfair financial advantage gained by the custom.

*Inability to Prescribe.*—The inability to prescribe properly demonstrated by so many physicians is due to insufficient knowledge and practice in materia medica and is fundamentally responsible for its sequel, the ordering of proprietary and patent medicines. It probably would result in making better therapeutists—though not as scientific laboratory men—if medical colleges would encourage prospective medical students as much in taking a course in pharmacy as a pre-medical study as they do in the completion of a purely scientific curriculum, the substance of which is hardly ever used by the average practitioner.

*Illegible Writing.*—That the notorious habit of prescribers of writing illegibly has not been responsible for more trouble is due to the extraordinary skill with which the pharmacists decipher the different parts of prescriptions. This subject has received legal attention in some countries, and carelessness in ordering has been made a crime.

*Overdosage.*—Overdosage and the writing of freakish physical and chemical incompatibilities only serve to bear out what was said about the limited idea of materia medica and pharmacy retained by medical men from the teaching given in these subjects at most medical colleges. As better courses in these subjects are being given now than five years ago, the reform in this deficiency is bearing fruit.

*Prescription of Proprietary or Patent Medicines.*—The use of ready-made proprietary or patent medicines has already been well thrashed out and will not receive the attention here it otherwise would. As this largely results from not knowing how to combine the remedies desired in a particular case in the most palatable and compatible form, it has decreased as the movement for a better knowledge of materia medica has progressed. This movement will spread until every physician will have a better idea of the drugs contained in the United States Pharmacopeia and National Formulary, using other drugs only when a real improvement of benefit to his patient is exploited. How few of the proprietaries of the last decade really were the products of advanced pharmacy, and how many were only well-known and often worthless drugs, done up in an elegantly deceiving style! In any of the big prescription pharmacies one will find dozens of preparations that once reigned supreme in their separate fields and are now condemned to the oblivion of the top shelves or the back room. In speaking of substitution the often unnecessary habit of specifying the maker's name when an official preparation is wanted was commented on sufficiently.

*Exposing Mistakes in Dispensing.*—Reciprocally the same feeling should manifest itself when the pharmacist is thought to have made a mistake in the dispensing of a prescription as was mentioned in discussing the delicate way a physician's error should be called to his attention by the prescriptionist. If a medicine has not the desired effect or does not come up to expectations as to palatability or appearance, the blame is not always with the dispenser. The physician may have forgotten to order some ingredient or may have prescribed something of which he did not know the properties as well as he might. If the medical man will use his ingenuity as often as his pharmaceutic friend does, the patient will not have his confidence shaken in the latter and will probably not be as suspicious of the physician himself. Neither the pharmacist nor physician should forget the just defenses of idiosyncrasy and tolerance in any case in which these seem to be the explanation of the patient's complaint against one or the other.

## SUMMARY OF SUGGESTIONS

In conclusion, let the members of both professions feel the need of co-operation with each other; let pharmacists, out of consideration for their medical friends,

refuse to do something and insist on doing others, and let the latter act reciprocally. At the same time nothing should be done which is unjust to the public. Therefore the practice of paying commissions to pharmacists for work referred, or to physicians for prescriptions, should be absolutely discontinued. Recommendation of either prescriber or dispenser should always be based on merit and not on expected financial gain. Opinions derogatory to any member of either calling should be indulged in only in extreme cases.

Pharmacists should prescribe only in rare cases, including poisonings and instances in which first aid is needed before the physician arrives. Skill in dispensing should be possessed by all pharmacists and substitution never practiced. Errors on the part of physicians should be handled so that the patient does not know of them and corrections explained where the medicine is urgent and it is impossible to reach the physician. The rule in the matter of handling patent and proprietary preparations should be "Buy what is called for and sell on demand only" (Coody).

Physicians, on the other hand, should not dispense their own prescriptions, except in cases in which urgency or remoteness from a drug-store demands it; should possess a proper knowledge of materia medica and prescription writing, and write legibly and order carefully, avoiding the unnecessary use of ready-made preparations and too extended specification of the manufacturer's name of official remedies, and should not expose to the patient blunders thought to have been committed by the pharmacist when unsatisfactory results are obtained.

Joint meetings where subjects of a kindred nature could be discussed are also advisable, so that such topics as those here suggested and others could be thrashed out.* The two professions should act in unison in the propaganda for the United States Pharmacopeia and National Formulary.

I think that, as our differences are being adjusted, we are again making it plain to the pharmacist and to the physician just where the one is intruding on the ground of the other. There seem to be many things too often left undone that would make up for the loss occasioned by a stricter adherence to one's own work. For example, much of the laboratory work of the physician, like the examination of blood, urine, sputum and feces, could be done for him by the pharmacist, as courses are given in most colleges in these branches; in this way the pharmacist becomes the co-worker of the physician in the diagnosis of the diseases of which mankind is affected.

Whether everyone will agree with all I have said or not, is it not better to give these matters attention? They mean much to both professions. As these and other infringements that often wedge in between these allied professions become adjusted we should have a better pharmacy and a better medicine, and together they will battle in the war on the ailments "that flesh is heir to." I can close in no better way than in the words of Dr. H. H. Rusby: "We are not taking part in this life for all that we can get out of it. The very best part ..... is its voluntary sacrifices, the best part of our possessions, that part which we freely give away because it will do better work elsewhere than if retained in our own possession."

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* Some articles dealing with the relationship between physicians and pharmacists, which have appeared in medical journals, are here cited for the benefit of those who may wish to look up some of them:

Anderson, W. C.: Relations of the Physician and the Pharmacist, New York State Jour. Med., August, 1909.

Barbour, M.: The Relation of Medicine to Pharmacy, New York Med. Jour., April 2, 1910.

Coody, A. S.: Pharmacists and Physicians, Proc. Am. Pharm. Assn., 1908, p. 1056.

Dimmitt, A.: Relationship between Physicians and Pharmacists, Kentucky Med. Jour., June, 1908.

Earp, S. E.: Relation of Physician and Druggists, Jour. Indiana State Med. Assn., November, 1908.

Francis, J. R.: Relation of the Pharmacist to the Physician, Jour. Indiana State Med. Assn., November, 1908.

Hemenway, H. B.: Relationship of Druggists and Physicians, Chicago Med. Recorder, Nov. 15, 1907.

Klingberg, W. A.: The Ideal Relation between Doctor and Druggist, Jour. Kansas State Med. Soc., August, 1909.

Marshall, W. C.: Relation of the Pharmacist to the Practice of Medicine, Virginia Med. Semi-Month., Aug. 27, 1909.

McCloskey, C. J.: Doctor and Druggist, Med. Soc., New Jersey, May, 1908.

McCormack, J. N.: What Should be the Relations of Pharmacists and Physicians? Druggists' Circular, October, 1907.

McKee, E. S.: Medico-Pharmaceutical Graft, Pacific Pharm., May, 1908.

Mittelbach, William: Union of Physician and Pharmacist, Druggists' Circular, March, 1907.

Ormsbee, J. L.: The Physician's Relation to the Pharmacist, Practically Considered, Jour. Missouri State Med. Assn., February, 1909.

Romig, E. B.: The Pharmacist as a Professional Man and His Relation to the Physician, West Virginia Med. Jour., December, 1908.

Rusby, H. H.: Cooperation of Physicians and Pharmacists, Druggists' Circular, October, 1907.

Sutphin, P. C.: Relations that Should Exist between Pharmacists and Physicians, Kentucky Med. Jour., December, 1907.

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## THE NEW TEST FOR CANCER OF THE STOMACH, WITH SUGGESTED IMPROVEMENTS *

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### *1. INTRODUCTION*

Medical means have been of no avail in the treatment of cancer. The only resort is surgery. If we succeed in radically extirpating the cancer *in toto*, the chances of a permanent cure are good. The importance of an early diagnosis in cancer in general, and in carcinoma ventriculi in particular, is obvious. Unfortunately in cancer of the stomach an early diagnosis is rather the exception than the rule, and in most cases, when we learn the diagnosis, we also learn the prognosis. The diagnosis of cancer of the stomach rests on the history of the patient; on the absence of free hydrochloric acid; on the presence of lactic acid, Boas-Oppler bacilli, a palpable tumor and occult blood; and on the occurrence of a variable degree of motor insufficiency. No single factor is diagnostic in itself, but a combination of these features is required for the establishment of the diagnosis. Unfortunately such a combination is not always present, and when it is present, it is not discernible at a very early stage of the disease. The Solomon test is of very little value. Any new sign that will aid in the diagnosis of carcinoma ventriculi is more than welcome.

A few months ago Neubauer and Fischer[1] published their results of a new test for the diagnosis of cancer of the stomach: the so-called glycyltryptophan test. In order to comprehend the rationale of this test we must understand certain principles in physiologic chemistry. Our food, as such, cannot be assimilated by the system. In order to be absorbed most food substances must be converted into simpler cleavage products. Thus pro-

* From experiments conducted in the Laboratory of Biological Chemistry of Columbia University, at the College of Physicians and Surgeons, New York, under the auspices of the George Crocker Special Research Fund.

1. Neubauer and Fischer: Deutsch. Arch. f. klin. Med., 1909, xcvii, 499.

teins to be absorbed by the system, must go through a series of changes, until they reach the simplest grade. This series of changes for coagulable proteins, such as albumin, is: (1) acid metaprotein, (2) primary proteoses, (3) secondary proteoses, (4) peptones, (5) "polypeptids" and finally (6) amino-acids. Amino-acids are the simplest cleavage products into which proteins must be broken up for assimilation by the body. The hydrolytic cleavage of the proteins into amino-acids is effected by the digestive enzymes. There are numerous amino-acids, such as glycin, alanin, leucin, tyrosin, tryptophan, etc., each exhibiting characteristic properties. In a normal stomach the digestion of proteins is never carried to the amino-acid stage. It is only in the intestines that extended hydrolysis into amino-acids occurs.

Various investigators have shown that cancerous tumors elaborate a certain enzyme which exhibits strong proteolytic powers, and which is capable of converting proteins as well as simple peptids into amino-acids. Although benign tumors, as well as other somatic tissues, possess similar properties, their peptid-cleaving powers are rather weak—they never equal the powerful peptidolytic action of malignant growths. Neubauer and Fischer have contrived to utilize this fact in a new test for cancer of the stomach. They used glycyltryptophan for this purpose.

Glycyltryptophan is a dipeptid,[2] one of the simplest types of peptids. As a synthetic product, it owes its existence to the ingenuity of Emil Fischer, who has made some of the most important chemical discoveries of modern times. Emil Fischer succeeded in combining various amino-acids into forms that closely resemble natural proteins of the simpler types. These synthetic peptids are like proteins in responding to the hydrolytic action of proteases[3] and in yielding their corresponding component amino-acids. Glycyltryptophan, as its name signifies, consists of a union of glycin and tryptophan radicals.

In making their test, Neubauer and Fischer add filtered stomach contents to a solution of glycyltryptophan. The mixture is then placed in a thermostat for about twenty-four hours. At the end of that time a test is made for the presence of tryptophan. If tryptophan is found it means, according to Neubauer and Fischer, that an enzyme present in the stomach contents has converted glycyltryptophan into glycin and tryptophan. Such a result could not be due to normal constituents of stomach contents, e. g., pepsin, rennin, lipase or hydrochloric acid, since these agents do not, under gastric conditions, split either dipeptids or proteins into amino-acids. An enzyme capable of converting glycyltryptophan into glycin and tryptophan occurs in gastric contents only in cases of malignant growths of the stomach.

Glycyltryptophan was used for this test because tryptophan, which it easily yields, may be more readily detected than any other amino-acid. No protein yields a larger proportion of tryptophan. Tyrosin is perhaps the only other amino-acid which could be employed to similar advantage in such work. Tyrosin may be easily detected by reason of its comparative insolubility and its consequent tendency to crystallize. A dipeptid yielding a large proportion of tyrosin, such as glycyl-l-tyrosin might be expected, therefore, to serve as satisfactorily in this test as that particular dipeptid did in similar work recently by Abderhalden[4] in another connection. The simplicity, promptness and delicacy of the bromin test for tryptophan, however, give the advantage to the compound favored by Neubauer and Fischer. That the cleavage of dipeptid in the stomach in the case of cancer is done by an enzyme secreted by the tumor, and that it is not accomplished by pepsin, was shown by Kohlenberger.[5]

2. Dipeptid—a peptid containing only two amino-acid radicals.
3. Proteases are enzymes possessing the power of splitting up proteins or peptids, e. g., pepsin, trypsin, erepsin, etc.

### NEUBAUER AND FISCHER'S PRECISE METHOD OF PROCEDURE

In applying the glycyltryptophan test, an Ewald test breakfast is extracted in thirty to forty-five minutes after a meal and filtered. Glycyltryptophan[6] is treated with some of the filtrate. The bottle containing the mixture is placed in a thermostat for twenty-four hours. At the expiration of that period the contents are tested for the presence of tryptophan. This is done as follows: About 3 or 4 c.c. of the contents of the bottle are removed with a pipette from underneath the layer of toluol and placed in a test-tube. A few drops of 3 per cent. acetic acid solution are added. Saturated aqueous solution or bromin is then added from a pipette, drop by drop, to the stomach contents in the test-tube, until a reddish violet color appears. The appearance of this color, at times a rose-red, shows the presence of tryptophan and the test is positive.

Considerable practice is required for the accurate performance of the test in the presence of very minute proportions of tryptophan, because slight excess of bromin may make the characteristic color disappear in a moment. Large excesses may impart a lemon-yellow color to the mixture. Whenever the reddish-violet color merges into yellow, we know positively that there is an excess of bromin in the mixture.

The opening at the tip of the pipette from which the bromin solution is dropped should be a fine one, and the "bromin water" added very cautiously, drop by drop, until, in case reaction is positive, a reddish-violet color appears. If reaction is very faint the test-tube should be left standing for a while. In about ten minutes, in such cases, the reaction may become considerably intensified. Usually 5 to 7 drops of bromin water are required to bring out the reaction in 3 to 4 c.c. of contents, but sometimes 1 to 2 drops are sufficient. When that is the case it is well to let a single drop of bromin water fall on the wall of the test-tube instead of into the liquid itself, in which case the volume of delivered bromin solution is reduced to a fraction of a drop, and excess is avoided.

Instead of bromin solution, pure bromin vapor may be used. If a bottle containing bromin is tilted slightly over the mouth of the test-tube, heavy bromin vapor will fall into the test-tube and dissolve in the liquid; and the reaction will promptly appear to its maximum degree. Great caution must be exercised, in this treatment also, not to add an excess of the vapor, for an excess will make the reaction disappear at once, and a lemon-yellow color may be imparted to the contents.

Bromin itself should be handled with great care, for it is extremely irritating to the respiratory mucous

4. Abderhalden: Ztsch. f. physiol. Chem., 1909, lxii, 136.
5. Kohlenberger: Deutsch. Arch. f. klin. Med., xcix, 148.
6. Glycyltryptophan, as prepared for the test, is a clear watery solution. It is dispensed by Kalle & Co., Biebrich a. Rhein, all ready for use in little bottles. Each bottle contains a few minims of glycyltryptophan solution with a layer of toluol over it, as a preservative. This amount of glycyltryptophan is sufficient for one test. The bottle has a mark on it up to which the filtered stomach contents is to be added. The total capacity is about 15 c.c.

membrane. Under no circumstances should plain liquid bromin be mixed with the gastric contents to be tested. An aqueous bromin solution may be kept saturated by retaining in it a slight excess of the heavy, liquid bromin.

Acetic acid is added to the mixture to be tested because the reaction appears only in an acid medium, perhaps very faintly so in a neutral one, but never in an alkaline medium. Almost all stomach contents are acid and in testing them for tryptophan the addition of acetic acid may not be necessary. In mixtures of very low acidity the addition of acetic acid seems to serve a useful purpose.

### SPECIAL SOURCES OF ERROR IN THE GLYCYLTRYPTOPHAN TEST

Neubauer and Fischer made a series of tests in normal and pathologic cases and were extremely gratified by the results obtained. The following sources of error in the application of the glycyltryptophan test are mentioned by them:

1. *Presence of Tryptophan in the Stomach Contents.*—Neubauer and Fischer advise tests for tryptophan in the stomach contents before glycyltryptophan is added. If tryptophan is found, the specimen of stomach contents should be rejected, they say, and another one subjected to the test. I do not agree with Neubauer and Fischer in this regard, as I shall show further on in this paper.

2. *Presence of Peptid-Splitting Bacteria in the Stomach Contents.*—Neubauer and Fischer have tested the effects of pure cultures of various species of bacteria on glycyltryptophan and have found that some species are able to split off tryptophan. The addition of toluol to the material in the test is proposed by them as a safeguard against such bacterial action. The passage of the stomach contents through a filter, according to them, also removes the offending micro-organisms. This danger is greatly overestimated by Neubauer and Fischer.

3. *Presence of Trypsin in the Stomach Contents.*—Duodenal contents may regurgitate into the stomach and the trypsin may split up the glycyltryptophan. Neubauer and Fischer exclude this latter possibility by examining the stomach contents in gross for bile, which is easily recognized by its greenish color. In the presence of manifest bile another specimen must be used for the test.

4. *Presence of Blood in the Stomach Contents.*—According to Neubauer and Fischer blood is capable of splitting up glycyltryptophan and thus serving as a source of error in the test. If the presence of blood is suspected, a test such as the guaiac or benzidin test should be made for it. If occult blood is present, Neubauer and Fischer recommend that that specimen be discarded and a new one tested. The danger from the presence of occult blood is also exaggerated by Neubauer and Fischer.

Lyle and Kober[7] who recently reported the results of their study of this test as applied to twenty-one cases concluded as follows: "Our results with this test have been satisfactory. A repeated negative reaction is very valuable. When the test is positive, the complication of a regurgitation of trypsin must be thoroughly investigated."

7. Lyle and Kober: New York Med. Jour., June 4, 1910, p. 1151.

### 2. METHOD OF EXPERIMENT

I have been engaged, during the past few months, in a study of the value of this new test for cancer of the stomach in its various aspects, and my experience agrees with the results obtained by the former investigators. I wish, however, to propose some important modifications based on a study of sixty-three normal and pathologic cases in all forms of gastric disease (see Section 4, Record of Cases).

It is my conviction that the employment of glycyltryptophan is superfluous. The tryptophan reaction may be obtained without it. Every test of my series of cases was a double one (one with and one without glycyltryptophan), and glycyltryptophan was found to be unnecessary. The reason is obvious. The enzyme secreted by the cancer is potent enough to hydrolyze protein, as well as dipeptid into amino-acids; nor does it have to do it unaided, for in the vast majority of cases the associated pepsin converts accompanying protein to peptones. There were only about two or three instances in my series of cases, in which the test was positive in the presence of glycyltryptophan, but negative in the absence of that compound. On the other hand, I had some cases in which the opposite was true—in which without glycyltryptophan a better reaction was obtained than with it. More than that, I received the impression that the addition of glycyltryptophan may at times serve as a source of error. It is possible that some of the bottled specimens of glycyltryptophan undergo spontaneous decomposition into the component amino-acids. I noticed in two tests the production of a very deep red color in the presence of glycyltryptophan, whereas in its absence no reaction occurred. (In one instance a clear-cut case of chronic gastritis. See Record of Cases, special Case 39.)

These observations aroused my suspicion. On one of the two occasions referred to, there was a surplus of the specimen of stomach contents under examination. I then tested that specimen with a sample of glycyltryptophan from another bottle and obtained only the faintest trace of a reaction. There appears to be no other explanation for this exceptional result, than the assumption that the first sample of glycyltryptophan contained free tryptophan.

I have subjected seventeen bottled samples of our supply of glycyltryptophan to tests for free tryptophan. Distilled water instead of stomach contents was added to each of these bottles of glycyltryptophan.[8] The tests gave entirely negative results in each case. It should not be forgotten, however, that suspicion was aroused in only two out of nearly 150 instances, and, therefore, the seventeen negative results would not exclude the correctness of my assumption that two of the samples employed contained free tryptophan.

There are several advantages in excluding glycyltryptophan from the test. Glycyltryptophan is comparatively expensive.[9] The toluolized samples form opaque, milky mixtures with stomach contents. Detection of slight proportions of tryptophan may be very difficult, often is impossible, in such opaque media. It is the clear solution only that develops, as a rule, a distinct and unmistakable reaction. Filtering the opaque mixture does not do any good in most cases. The opacity persists in spite of repeated filtrations.

8. Each bottle contained sufficient glycyltryptophan for one gastric test.

9. Material for 150 tests, imported duty-free for use in this laboratory, cost $50.

Neubauer and Fischer advise the use of a regular Ewald test breakfast extracted in thirty to forty-five minutes. I found, however, that employment of a regular dinner and extraction of some of it at a later stage of digestion (within three or four hours), served the purpose better. I convinced myself of this in connection with specimens of contents from two cases that showed marked tryptophan reactions after a regular dinner, but failed to give any reaction after an Ewald test breakfast, the stomach having been washed previously (Cases 1 and 3). Both were obstruction cases. The Ewald test breakfast is ideal for testing the secretions of the stomach, but as an aid in the test for cancer enzymes, it is much inferior to a regular dinner. There is only one class of cases for which the Ewald test breakfast may be preferred. It happens occasionally, though very rarely, in cases of stagnation, that a stomach under the influence of a heavy meal will secrete hydrochloric acid, while the light Ewald test breakfast will not cause any secretion. It will be pointed out later that hydrochloric acid reduces the activity of, or may destroy, the cancer enzyme. When a negative tryptophan reaction is obtained in a case of pyloric stenosis showing free hydrochloric acid, it may be desirable to wash the stomach and administer an Ewald test breakfast, so that the contents may possibly be free from hydrochloric acid, and the elicitation of the tryptophan reaction favored on that account. (Group 11 illustrated this point.)

Neubauer and Fischer state that "hydrochloric acid, in a strength equal to 0.36 per cent., destroys this (cancer) enzyme." While the results of my experiments corroborate this general statement, there appear to be exceptions to it. Cases 11 and 16 gave marked tryptophan reactions in the presence of considerable free hydrochloric acid.

Neubauer and Fischer further advise the application of the tryptophan test to stomach contents before adding glycyltryptophan for the detection of the cancer enzyme. If a positive tryptophan reaction is obtained with bromin water, that specimen, they say, should be discarded and a new one secured. But why discard it? This response tells the facts in the case! I detected preformed tryptophan in untreated stomach contents repeatedly. I obtained the reaction directly and easily. I have obtained it frequently in contents from cancer cases but in no others! Of course, if one intends to use glycyltryptophan, the course prescribed by Neubauer and Fischer is the best one to pursue, but the results of my own research warrant the conclusion that the use of glycyltryptophan for the detection of gastric cancer is superfluous.

I tried the effect of adding to stomach contents protein such as fibrin, or food from the meal, with the idea of enhancing the reaction, but the results were negative.

Neubauer and Fischer state that the tryptophan reaction must be obtained in twenty-four hours, or it is of no value, since bacteria are likely to hydrolyze the dipeptid and thus produce tryptophan. They experimented with pure cultures of micro-organisms and found that certain species possess proteolytic properties. As a safeguard against this contingency, as has already been stated, they advised the addition of toluol. My experiments have dealt not with pure cultures, but with stomach contents, as such. I have kept specimens of stomach contents over a month (some specimens being devoid of free hydrochloric acid), both with and without preservatives, and, except in carcinoma cases, tryptophan did not develop from the admixed glycyltryptophan. Only in two achylic cases, on very prolonged standing, did the reaction appear in contents from non-cancerous patients. Therefore, when an untreated specimen is kept for forty-eight hours in a thermostat, there is no special danger that bacterial development of tryptophan will occur. Sometimes a faint reaction becomes more marked in forty-eight hours. The addition of preservatives is superfluous and inconvenient. Thymol fragments form a heavy, milky emulsion with stomach contents, which is intensified by the addition of bromin water. Toluol is better, but it likewise forms a turbid mixture with stomach contents, and, as I mentioned before, such turbidity interferes with sharp elicitation of the tryptophan color reaction with bromin water. Chloroform and ether are best in this respect, but they seem to interfere somewhat with the reaction in certain cases.

I disagree with Neubauer and Fischer in their view that blood serves as a source of error in the glycyltryptophan test. The testing of contents for *occult* blood is superfluous. I do not wish to be placed in the position of taking issue with Neubauer and Fischer on the proposition that blood contains proteolytic enzymes. My contention is merely that blood in stomach contents, in a quantity insufficient to be betrayed by its color, is not potent enough to hydrolyze protein or glycyltryptophan into detectable quantities of tryptophan. This conclusion is sustained by observations in several cases, in which occult blood was present in the contents, as proved by blood tests, and yet no tryptophan could be detected after application of the glycyltryptophan test. More than that, I even added blood to stomach contents by getting blood from the patient's finger, but no tryptophan could be obtained in the mixture even after standing in a thermostat for days. This was done by me on two patients, whose cases were both anacid. I also added blood from myself and from a fellow worker in the laboratory to glycyltryptophan, in quantities just sufficient to impart a slight bloody tinge to the solutions, but after six days' incubation in a thermostat none of the mixtures contained a trace of tryptophan. Of course, it is probable that if a large quantity of blood is added to gastric contents, tryptophan will be formed, but such contents are, in general, worthless in this connection for another reason, namely, that it is impossible to discern the characteristic tryptophan-bromin color in a red or dark-colored medium. Occult blood, therefore, cannot serve as a source of error in the tryptophan test.

Duodenal contents which have regurgitated into the stomach are likely, if sufficient in quantity, to vitiate the test, since the contained trypsin may convert proteins into amino-acids and thus produce tryptophan that might be ascribed to cancer enzyme. Unless bile is manifestly present in the gastric contents, however, there is little or no danger in this connection, assuming, of course, that bile and pancreatic fluid always appear together. Neubauer and Fischer aptly remarked that no chemical test need be made for bile in doubtful cases. It is sufficient, they believe, to examine the contents in gross and if bile is obviously present, as evidenced by greenish color of the contents, such a specimen should be discarded and a fresh one obtained. Occult bile could hardly be accompanied by sufficient trypsin to produce a detectable amount of tryptophan in the test.

Lyle and Kober seem to be impressed by the possible influence of the trypsin that may occur in stomach contents in this relation. From extended experience in stomach work I can say that duodenal material rarely

appears in stomach contents. Duodenal fluid may occasionally be present in very trivial amounts, but it cannot then vitiate the tryptophan test. Moreover, pepsin in the presence of acid destroys trypsin. Acid itself does so. To serve as a source of error in the tryptophan test, duodenal contents must be present in large quantities, and the stomach contents must be alkaline. These two conditions prevail only when there is an obstruction of the duodenum below the papilla and in certain pathologic cases following gastro-enterostomy, in which the drainage goes from the afferent loop into the stomach, instead of into the efferent loop. I have had several such cases; two of them are included in these experiments (Cases 14 and 15). But in cases like these the presence of duodenal contents may be determined without any difficulty.

After all is said, one fact stands out prominently, viz., that the glycyltryptophan test yields positive results in practically all cancer cases and hardly ever in any others, as may be seen from the reported results of the experiments by Neubauer and Fischer, Lyle and Kober and myself.

#### THE AUTHOR'S TRYPTOPHAN TEST

The test, as I have modified it and now recommend it, is made as follows: Four or five hours after a regular dinner, some stomach contents are secured, filtered and tested with bromin water for tryptophan. If present, reaction is positive. If absent, some of the filtrate transferred to a stoppered bottle and treated with a little toluol, or better still, without a preservative, is put in the thermostat and tested again for tryptophan twenty-four to forty-eight hours later. Although the reaction very often develops at room temperature, the mixture should be kept in a thermostat for the period stated.

#### DEFICIENCIES OF THE TRYPTOPHAN TEST

The most serious defect of the tryptophan test is its inconstancy. The reaction may be present in one specimen of stomach contents and absent in another from the same patient. The only safeguard against this uncertainty is, in case of negative results, to test three or four specimens obtained at different times. If three or four tests yield negative results, the case is most likely non-cancerous. Work now in progress may ultimately indicate the reasons for the inconstancy referred to. (See addendum.)

Satisfactory results are unattainable unless the contents are practically colorless. Admixture of coloring matter may make it impossible to conduct the test. The presence, therefore, of blood or coffee-grounds in the contents makes it necessary to select another specimen for the test. In giving the patient a meal for the test, he should be instructed not to ingest any foodstuffs that are likely to impart color to the contents. Coffee, tomatoes, strawberries, etc., for obvious reasons, should be excluded. Tea must not be strong, else the contents will be sufficiently reddish to render the test useless. (See addendum.)

The fact that free hydrochloric acid interferes with the activity of the cancer enzyme or may destroy it altogether, is a serious obstacle in the way of reliable employment of the tryptophan test.

### *3. GENERAL CONCLUSIONS*

A critical review of the results obtained in this study of the tryptophan test convinces me that it is a valuable sign in the diagnosis of cancer of the stomach. It is a sign in itself. The other signs of cancer, such as absence of free hydrochloric acid and presence of lactic acid, occult blood, coffee-grounds, etc., have no value whatever, when taken individually, since they appear in conditions other than carcinoma. They are of value only in conjunction with other data. Moreover, none of these has any negative value. In these respects the tryptophan test is superior to any of them. True, it is inconstant, but are positive results from the Widal test, the finding of the tubercle bacilli, the finding of plasmodia, constant features? However, in matters of such importance many observations must be made before conclusive deductions can be drawn. I cheerfully recommend this simple tryptophan test to the profession for the further study and more complete determination of its real value.

Is it an *early* sign of cancer? I do not know! I have not been fortunate enough, as yet, to get a very early case and determine the matter, one way or the other. Much more work must be done in this connection before that important question can be answered.

I wish, in this connection, to express my indebtedness to Prof. William J. Gies of the College of Physicians and Surgeons, who has placed his laboratories at my disposal and has secured the support necessary for the conduct of this rather expensive research. With his ever-ready counsel and valuable suggestions he has contributed greatly to the success of my work. I also express my indebtedness to Prof. Francis Carter Wood of St. Luke's Hospital, Miss Selma Granat of the Presbyterian Hospital, Dr. Julius Rudisch of the Mount Sinai Hospital and Drs. A. Zemansky and W. Weinberger of the Lebanon Hospital for supplying stomach contents of some very interesting cases.

#### ADDENDUM

In an endeavor to perfect my methods further, while the manuscript of this paper was in the hands of the editor, I made observations warranting the following preliminary conclusions: Pepper interferes with the tryptophan-bromin reaction; so does lemon juice. Sugar is an excellent stimulant to the secretion of cancer enzyme; beef is much better than chicken. A good meal for the tryptophan test is one consisting of bread and butter, with meat prepared very plainly without extra seasoning or dressing, and some very sweet, weak tea. I made about a dozen tryptophan tests recently on each of two patients (Cases 16 and 17), and, using such meals, obtained uniformly positive results in almost every test.

I have secured excellent results by giving a meal consisting of white bread and very sweet weak tea without milk, the meal having been extracted in one hour. This statement is based, however, on tests on only two patients.

### *4. RECORD OF CASES*

#### I. CASES WITH CONTENTS YIELDING A POSITIVE TRYPTOPHAN REACTION *

CASE 1.—M. G., male, aged 49. Free hydrochloric acid, 0; total acidity, 58. Lactic acid, present. Two tests were made for tryptophan; both were positive. Tryptophan was present in the gastric contents immediately after removal from the stomach. A test breakfast, after lavage of the stomach, failed to yield contents giving the tryptophan reaction even after standing several days in the thermostat. The patient

* Every test referred to in this record as a tryptophan test, unless otherwise indicated, was a double one—with glycyltryptophan and without it. The results in each case were identical in quality unless otherwise indicated.

was operated on and proved to have an extensive carcinoma originating in the pylorus.

CASE 2.—I. S., male, aged 45. Clear-cut carcinoma. Coffee-grounds. Free hydrochloric acid, 0; total acidity, 136 to 166. Lactic acid, considerable. Immediately after removal of contents from the stomach a faint tryptophan reaction was directly obtained. After forty-eight hours in the thermostat, this reaction was more marked.

CASE 3.—S. D., male, aged 61. Clear-cut carcinoma involving the pylorus. Marked peristaltic movements. Free hydrochloric acid, 0; total acidity, 6. Lactic acid, considerable. Two tests were made for tryptophan; both were positive.

CASE 4.—G. E., male, aged 54. Cancer involving the pylorus. Three tryptophan tests were made, with two positive results and one negative. Free hydrochloric acid, 0 to 34; total acidity, 42 to 66. No lactic acid.

CASE 5.—G. E., male. Autopsy: cancer of the pylorus. Five tryptophan tests were made, two with stomach washings. Three Ewald test breakfasts were given. One Ewald tryptophan test was negative; the others were positive. In two tests the direct tryptophan reaction appeared after forty-eight hours' standing in a thermostat, but not before.

CASE 6.—N. T., female, aged 46. Palpable tumor. Patient died. Clear-cut carcinoma. No free hydrochloric acid in stomach contents. Two tryptophan tests were made with positive results. In one test the reaction was slight.

CASE 7.—S. F., male, aged 73. Cancer of the pylorus. Marked stasis of food. Free hydrochloric acid varied in quantity from a trace to 24; total acidity, 88. Lactic acid, present. Four tryptophan tests were made. Two were positive and two negative. The contents that gave the negative result contained free hydrochloric acid, 24.

CASE 8.—D. P., female. Cancer of the pylorus and posterior wall. Operation. A test for tryptophan was positive.

CASE 9.—S. N., male, aged 28. Carcinoma of the lesser curvature. Operation. Free hydrochloric acid, 0; total acidity, 6 to 14. Lactic acid, present. Two tryptophan tests were made; one was positive, one was negative.

CASE 10.—G. H., male, aged 51. Carcinoma ventriculi. Free hydrochloric acid, 0; total acidity, 10. Lactic acid, present. Palpable tumor. A tryptophan test was positive.

CASE 11.—S. D., male, aged 52. Carcinoma ventriculi. Marked peristaltic movements. Dilated stomach. Marked stasis. Refuses operation. Free hydrochloric acid, 26; total acidity, 92. Lactic acid, present. A specimen of stomach contents with the above acidities showed a marked direct tryptophan reaction. On two other occasions, with acidities of free hydrochloric acid, 50 to 72; combined, 24, and total, 108 to 130, direct tryptophan reactions were positive. One month prior to this, two tryptophan tests were negative.

CASE 12.—C. C., female. Suspected carcinoma. Two tryptophan tests; one positive, one negative.

CASE 13.—A. S., male, aged 36. Free hydrochloric acid, 32; total acidity, 76. This did not appear to be a cancer case. Unfortunately the patient could not be kept under observation. One tryptophan test was made with a positive result.

CASE 14.—A. T., female, aged 33. Material from the stomach contained much bile on repeated examinations. Free hydrochloric acid, 0; total acidity, 20. The patient underwent a gastro-enterostomy for pyloric ulcer two years ago. Non-cancerous case. Two tryptophan tests were made; both positive.

CASE 15.—S. G., male, aged 52. Jejunal ulcer. Gastro-enterostomy four years ago. Non-cancerous. Material from the stomach contained much bile on repeated examinations. Free hydrochloric acid, 0 to 28; total acidity, 24 to 68. One positive tryptophan test was made.

CASE 16.—R. K., male, aged 54. Case of suspected carcinoma. Free hydrochloric acid as high as 50; always present. About a dozen tryptophan tests were made and almost all were positive.

CASE 17.—I. C., male, aged 46. Clear-cut case of cancer. Palpable tumor. Cachexia. Coffee grounds. Very poor motility. Free hydrochloric acid, 0; total acidity, 14. Lactic acid, considerable. A dozen tests for tryptophan were made; all were positive.

CASE 18.—L. B., male, aged 65. Patient of Dr. Jerome M. Lynch. Clinical diagnosis by Dr. Lynch, carcinoma ventriculi. Operation by Dr. Lynch about 2½ years ago for cancer of the rectum. Free hydrochloric acid, 0; total acidity, 14. Lactic acid, trace. Starch digestion, good. Occult blood, present. One test for tryptophan was made with a positive result.

CASE 19.—Mrs. M., aged 54. Patient of Dr. William Weinberger. Undoubted case of carcinoma. Operation revealed a tumor in the pyloric region. Free hydrochloric acid, absent. Lactic acid, present. Two tests were made for tryptophan by Dr. Weinberger. The first was negative; the second, positive.

### II. CASES WITHOUT FREE HYDROCHLORIC ACID IN THE STOMACH CONTENTS AND NOT YIELDING POSITIVE TRYPTOPHAN REACTION

CASE 20.—S. L., male. Suspected carcinoma. Free hydrochloric acid, 0; total acidity, 48. Lactic acid, negative. One test was made for tryptophan, but with a negative result.

CASE 21.—J. O'H., male, aged 41. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 44-76. Lactic acid, 0. Two tryptophan tests were made; both were negative.

CASE 22.—A. C., female, aged 38. Suspected carcinoma. Free hydrochloric acid, 10; total acidity, 34. Lactic acid, 0. Blood in contents. Two tests were made for tryptophan; both were negative.

CASE 23.—C. R., female. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 14. Lactic acid, 0. Several tryptophan tests were made; all were negative.

CASE 24.—A. N., female, aged 55. Achylia gastrica. The patient has been under my observation for the past nine years. Several examinations were made for tryptophan; all were negative. Free hydrochloric acid, 0; total acidity, 6. Lactic acid, 0.

CASE 25.—A. N., male. Achylia gastrica. Free hydrochloric acid, 0; total acidity, 8. Lactic acid, 0. One tryptophan test was made with a negative result.

CASE 26.—R. H., aged 52. Spasmodic stricture of the upper part of the esophagus. Free hydrochloric acid, trace; total acidity, 36. Several tryptophan tests were made, but all were negative.

CASE 27.—I. D., male. Chronic gastritis (alcoholic). Free hydrochloric acid, 0; total acidity, 14. Lactic acid, 0. One tryptophan test was made with a negative result.

CASE 28.—N. F., male. Suspected carcinoma. Free hydrochloric acid, 0; total acidity, 16. Lactic acid, 0. One tryptophan test was made with a negative outcome.

CASE 29.—R. McM., female, aged 42. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 38. Lactic acid, 0. Three tests were made for tryptophan; all were negative.

CASE 30.—A. M. K., aged 36. Gastroptosis, hypoacidity. Free hydrochloric acid, trace; total acidity, 24. Lactic acid, 0. Two tryptophan tests were made; both were negative.

CASE 31.†—O. D., female. Diagnosis; achylia gastrica. Free hydrochloric acid, 0; total acidity, 4.

CASE 32.—E. T., female. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 40.

CASE 33.—B. J., male. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 25.

CASE 34.—D. F., female. Diagnosis, achylia gastrica. Free hydrochloric acid, 0; total acidity, 6.

CASE 35.—B. S., male. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 20.

CASE 36.—D. P., female. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 32.

CASE 37.—L. L., male. Chronic gastritis. Free hydrochloric acid, 0; total acidity, 16. Lactic acid, 0.

CASE 38.—M. B., female. Achylia gastrica. Free hydrochloric acid, 0; total acidity, 8.

### III. SPECIAL CASE, YIELDING TRYPTOPHAN REACTION WITH GLYCYLTRYPTOPHAN, BUT NONE WITHOUT IT

CASE 39.—B. C., male. Chronic gastritis and hyperacidity, very marked tryptophan reaction with glycyltryptophan; none without it.

† At least one test with glycyltryptophan and one without it was made in each of Cases 31-38, with uniformly negative results.

IV. CASES NOT YIELDING TRYPTOPHAN REACTION

None of the cases in this group gave the tryptophan reaction. The tryptophan test was repeated several times in many cases. The gastric contents from all these cases had free hydrochloric acid.

Six cases of hyperacidity.

Three cases of chronic gastric ulcer.

Five cases of neurasthenia.

One case of contraction of gastro-enterostomic orifice four years after operation. Marked stasis of food. Dilated stomach.

One case of arteriosclerosis.

One case of hypernephroma. Patient died.

Three cases of gastric atony, with marked stasis of food.

Two cases of gastroptosis.

One case of enlarged gall-bladder, probably due to calculi.

One case of chronic constipation.

71 East Ninety-sixth Street.

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# A STUDY OF THE BACTERIAL FLORA OF THE NASAL MUCOSA IN THE PRESENCE OF RHINITIS*

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This study represents an effort, extending over about two years, to learn something of the bacterial flora of the upper respiratory tract in the presence of disease. The purpose was to ascertain, first, whether the flora in our territory are comparable to regions where such investigations have been made, namely, in various parts of England and in Germany; secondly, to uncover, if possible, the etiologic factors in infections of the mucosa of this tract. Most of these infections are more serious in their final results than they are usually considered. They may not only be the precursors of diseased adnexa, of cervical adenitis, often of meningitis, but, by the absorption of formed toxins, they are worthy of consideration for the part played in hemic and vascular disorders leading to arterial hypertension and its sequelæ.

These are, fundamentally, infections which are peculiar to the mucous surfaces and, of course, must vary according to the environment, habits and social status of the infected subjects.

Only infections of the nasal mucosa are reported here. Detailed reports on specific bacteria will cover the other regions.

## CHARACTER OF THE RESEARCH

In this study endogenous diseases are not considered, only ectogenous bacterial invasion. The whole study includes examinations of about 250 cases of diseases of the upper respiratory tract, including a number of ear infections which presuppose postnasal infection, a considerable number of tracheal infections and a limited number from the polybacterial pharynx. Out of this research are taken 100 cases of nasal infection, listed in order of record, and these include a few cases of pernasal secretion from sinusitis.[1]

The whole series represents a greater number of diseases than of individuals, and this discrepancy between diseases and persons infected is due to a fact to which I shall later call attention more specifically, namely, the fact that it is not unusual to find coincident infection on different areas of the upper respiratory tract caused by distinct bacteria on the respective areas involved. The fact that bacteria grow with varying degrees of rapidity and virulence is, of course, well known, but it becomes a matter of importance, (from the therapeutic side), to appreciate the possibility of this cotemporaneous infection of different regions.

This locally variable susceptibility is probably due to three conditions: (1) the variation in culture media offered by the locality; (2) the variation in virulence in the respective regions, depending, doubtless, on specific local resistance to invasion; (3) the lowering of bacteriotropic pressure in reflexly related regions through stasis, the evolution of disease in one locality producing the lowered resistance in a region closely associated with it. As to regional variation, we know the proclivity for multiplication of the gonococcus on the mucosa of the urethra and of the conjunctiva, but it is rarely found growing on the upper respiratory tract. On the other hand, the pneumococcus has an adaptive habit which enables it to grow fairly well on the conjunctiva, well in the nose, ear and pharynx, and luxuriantly on the pulmonary mucosa, and even on the blood-stream itself; but it is not equally virulent in all sites *in vivo*, and is most selective as to its growth *in vitro*. So, as will be seen from the findings, the bacteria vary greatly in their selection of surface on which to grow.

## METHODS OF THE RESEARCH

Film preparations were made from the secretions taken by platinum loop, if plentiful, or by sterile swabs, if scant, and fixed in flame. For cultures a platinum loop sterilized in flame was introduced directly on the area involved in the inflammatory reaction. This method was used for all inoculations and, acting on the advice of the English workers in this field, they were made on Loeffler's blood-serum mixture which, as will be seen later, is probably not altogether reliable in fulfilling the possibilities of development for many of the organisms. They were all stained by Gram's method. In the presence of diverse colonies, subcultures were made and, from pure cultures obtained, cultural tests were carried out.

The method of obtaining materials differs from that employed by some of the English and German investigators and is more reliable, since some of them have depended on secretion blown from the nostrils, which is almost certain to be contaminated by the ever-present cocci in the skin and hairs of the interior nares, and unless special care is taken, mixes the secretions from the two nares. If the secretion is abundant, it is, of course, possible to wash the larger masses thoroughly and to obtain from them uncontaminated material, but in the beginning of acute infections, when there is only watery secretion, it is difficult to get such masses.

The method of blowing the material from both nostrils would be inaccurate in many cases, for there is abundant evidence that the two sides of the noses may vary as to their bacterial content, particularly in early stages of infection. It is even possible to have acute rhinitis on both sides caused by distinct organisms. In one case there was an acute febrile attack starting on the left side of the throat, passing to the left nostril and

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1. I must acknowledge my great obligation to the following individuals: Aaron Arkin, who carried through the cultures of the first series of sixty-four cases in the bacterial laboratory of the University of Chicago through the courtesy of Professor Jordan; Dr. Mary C. Lincoln, who carried through the second series of fifty cases and has critically examined the whole list; and my assistant, Miss Copeland, who with me has worked out the third series of 136 cases. I am also indebted to men in the laboratory of Wright and Douglas at St. Mary's, London, and to Dr. Allen of London, for confirmation of my findings in the probably most frequent causal factor—the *Bacillus segmentosus* of Cautley—and for courtesies extended by them. Without the cooperation of all these people it would not have been possible to carry out so thoroughly such a number of examinations in the time of the research.

TABLE 1.—SHOWING FINDINGS IN 100 CASES OF RHINITIS

| Chronologic No. | Rhinitis: Acute | Rhinitis: Acute on Subacute | Rhinitis: Acute on chronic | Rhinitis: Subacute | Rhinitis: Chronic | Sinusitis: Acute | Sinusitis: Chronic | Pyogenic Cocci: Staph. albus | Pyogenic Cocci: Staph. citreus | Pyogenic Cocci: Staph. aureus | Pyogenic Cocci: Giant micrococci | Pyogenic Cocci: Gram + Streptococci | Diphtheroids: Bac. segmentosus | Diphtheroids: Tuclassified | Diphtheroids: Yellow bac. | Diphtheroids: Brown bac. | Diphtheroids: Salmon bac. | Micrococcus catarrhalis | Mic. capsulatus (Friedländer) | Diplococci (unclassified) | Gram + and Gram − Pneumococcus | No growth on B. S. | Pyocyaneus | Streptobacilli Gram + | Influenza "bilo." | Morax-Axenfeld | Bac. fusiformis | Bipolar bac. | Resemble B. coli | Spored bac. | Koch-Weeks | Miscellaneous | Remarks | No. present in each |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 3 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 4 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 5 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 6 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 7 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 8 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 9 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 10 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 11 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 12 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
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| 30 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 32 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 33 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 34 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
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| 50 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 52 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 55 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 56 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 57 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 60 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 62 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 63 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
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| 77 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 79 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 82 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 87 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 88 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 89 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 92 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
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| 141 | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
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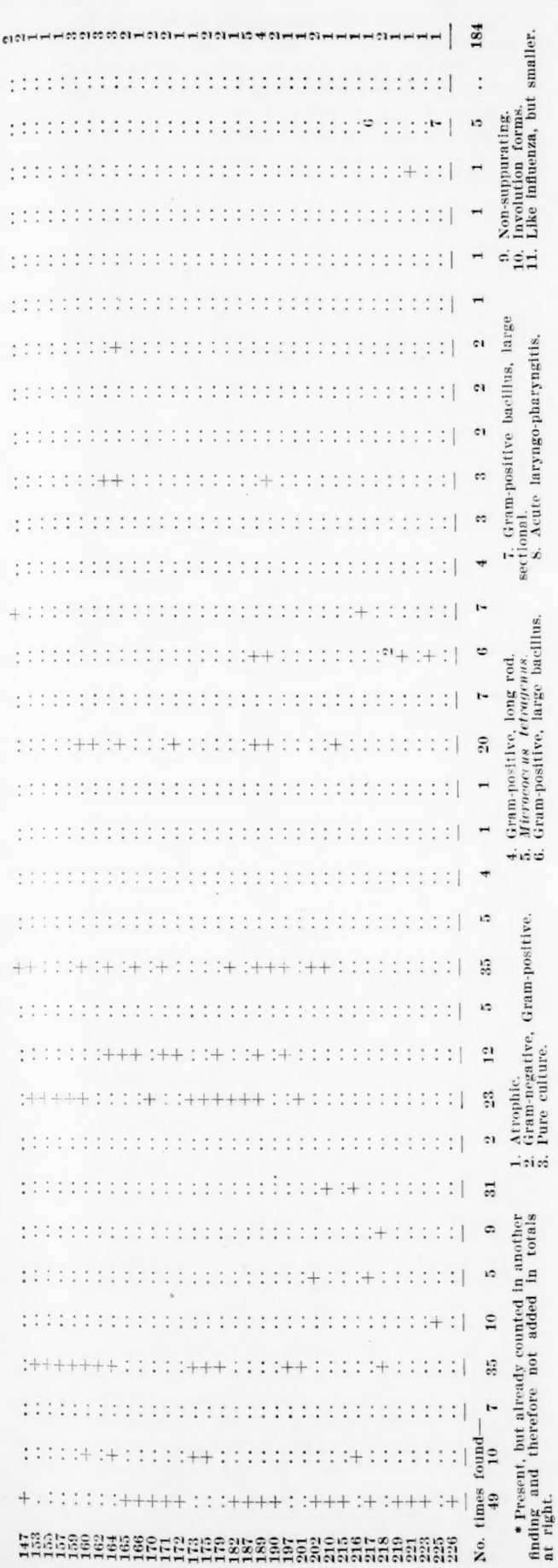
No. times found—
49 10 7 35 10 5 9 31 2 23 12 5 35 5 4 1 1 20 7 6 7 4 3 3 2 2 2 1 1 1 5 1 184
147 153 155 157 159 160 162 164 165 166 170 171 172 173 175 179 182 187 189 190 197 201 202 210 215 216 217 218 219 221 223 225 226
1. Atrophic.
2. Gram-negative, Gram-positive.
3. Pure culture.
4. Gram-positive, long rod.
5. Micrococcus tetragenus.
6. Gram-positive, large bacillus.
7. Gram-positive bacillus, large sectional.
8. Acute laryngo-pharyngitis.
9. Non-suppurating.
10. Involution forms.
11. Like influenza, but smaller.

* Present, but already counted in another finding and therefore not added in totals at right.

into the left frontal and, possibly, anterior ethmoidal cells, with the coincident development of frontal sinusitis on the right side, but with a different organism present. In this instance, it seemed that the bacterial infection on the left side did not pass to the right side at all, but so lowered the resistance through reflex vascular stasis that a latent infection became manifest on the right side. I judge this from the accidental fact that we had made a culture from the right frontal sinus a few weeks previously, which was also predominant in this finding. In this case our technic proved valuable and the evidence was incontrovertible, presenting the interesting feature of a patient suffering constitutional symptoms from pneumococcus infection on the left side and the local pressure symptoms from a staphylococcus on the right side. Instances might be multiplied, showing the fallibility of diagnosing the infection from specimens from areas other than those involved in inflammatory reaction, and justifying the technic employed. Coincident infection of the trachea by *Micrococcus catarrhalis* with rhinopharyngeal infection showing Cautley's bacillus, has been observed several times.

### TABULATION OF FINDINGS

Table 1 represents the 100 cases of nasal infection. The acute on chronic and acute on subacute are considered as acute infections, but they will also show among the subacute and chronic cases of rhinitis though counted but once. The number of acute cases are therefore sixty-four. There are thirty-four subacute and eleven chronic; five cases of acute sinusitis and nine cases of chronic sinusitis.

This table presents some interesting and instructive features. The number of cases and specimens examined is greater than the combined reports of the English observers, and differs in results from some and, in per centages, from all. Many bacteria are present accidentally and not in a casual way.

In Table 2 the bacteria are arranged by groups taken in the order of percentage of finding.

### *The Staphylococcus Group*

The three varieties of staphylococcus, *S. albus, S. citreus* and *S. aureus,* are listed separately, making a total of fifty-six cases, indicating a presence of these pus cocci in 56 per cent. of all cases of infection studied; other cocci added bring the total to 73 per cent. Lewis and Turner[2] made a study of twenty-six specimens from normal noses, disclosing pus cocci in 50 per cent.; but the most notable extended studies are those by Hesslauer[3] covering 186 specimens from the normal in which staphylococci are present in 25 per cent., and by Neumann[4] covering 206 cases, which showed the presence of *S. albus* in 98 per cent., *S. aureus* in 30 per cent. and *S. citreus* in 12 per cent.

Our percentage of staphylococci in infected cases is probably relatively very high. In some of these cases they seem to be the only organism present. The evidence of German and English observers is, however, against the probability of primary infection by them; they are almost universally considered as secondary invaders. Workers in the field of the conjunctiva have found it very difficult to grow staphylococci on the conjuctiva, while as to the study of staphylococcus infection in otitis there seems to be a great lack of agree-

2. Edinburgh Med. Jour., November, 1905, p. 393.
3. Centralbl. f. Bakt. Orig., 1903, xxxiii, 47.
4. Ztschr. f. Hyg., 1902, xl, 33.

ment, such men as Pes and Gradenigo[5] maintaining that they are always secondary invaders, while Zaufal and Roskin[6] feel that they may replace the primary exciting bacteria and a few assert that primary infection by staphylococci is possible.

It would seem that time must be allowed for the better differentiation of this group. While in some of these cases they seem to be the only possible causal organism, such a case as 74, pneumococcus infection, might easily have been laid at the door of staphylococcus, since staphylococci were present on the first day of the attack, no pneumococci being recovered from the secretion. At the end of a week, during which time the boy was not seen and had been very ill with typical pneumonia rhinitis, the smears and cultures showed pure culture of pneumococci. A few days later, staphylococci again appeared in the secretions and the pneumococcus disappeared.

Several cases showing pure culture of staphylococci in very red pharynges, and a few ear cases, in which the staphylococci were the only demonstrable agents in the attack, have been observed. It is only lately that we have been testing the liquefying reaction of the staphylococci and, in all cases observed in this regard, we have found the liquefiers to be associated with the more acute inflammatory reaction. This is in accord with the final conclusions of Axenfeld[7] and others who have studied this group, namely, that the liquefying staphylococci are the virulent ones and that most of the others are harmless.

If staphylococci invade the mucosa in a secondary way, it would seem that they do so because the primary infectors produce local injury to the mucosa, in like manner that staphylococci invade the skin following local irritation and lowering of resistance. In that event it is pertinent to inquire why they may not cause rhinitis, if present on the mucosa when it is injured by foreign bodies, as dust, or by chemical or thermal irritation. If we conclude that they are mostly of secondary occurrence, but that they may be secondary to other irritants than bacterial, then they could not be said to occur in epidemic form, and would be atypical clinically. Such seems indeed to be the case.

In the light, however, of this great preponderance of opinion against their primary invasion, we can not consider them as probable factors in starting the inflammation, but as secondary. I call them "possibly causal" in the cases in which they are present alone, that is, twenty-four times. Probably in these cases they are secondary to irritation other than bacterial, and possibly many would prove like Case 74, should repeated examinations be made. We are not considering the frequently occurring furuncles in the nasal vestibule. These are indisputably due to staphylococci and usually—possibly always—the aurens.

### *The Diphtheria Group—Bacillus Segmentosus of Cautley*

The second in percentage order of occurrence 35 per cent., the *Bacillus segmentosus*, is worthy of special consideration, but time is not available for it. A detailed description of this interesting organism will follow.

Though discovered by Cautley,[8] working under the local government board of London, in 1893, and investigated since by Gordon,[9] by Prosser-White,[10] by Benham[11] and by Allen,[12] and commonly known in England under the name of *Bacillus septus*, it is almost unknown in our literature. I had noted its presence for several years and had it reported by laboratories as "diphtheroids," "Gram-positive diplococci," etc., but could not identify it positively; I failed to ascertain anything of it from bacteriologists in this country and did not appreciate what I had, until Allen described it in 1908. On a visit to London last year I submitted my slides to Allen and to men in the Wright and Douglas laboratory, who confirmed the finding. So what I here report is known through England as the *Bacillus septus* (Cautley's bacillus).

It is a diphtheroid, Gram-positive bacillus, club-shaped, with rounded ends 0.2 or 0.3 by 0.5 microns. Its chief morphologic characteristic is the segmentation or barring due to an unstained septum, which caused Cautley to give it the name of *Bacillus coryzæ segmentosus*—coryza because he thought it to be the cause of the coryza of epidemic influenza.

Prosser-White found it in all of seven cases, Benham in twenty-five of twenty-seven and Allen in eleven of forty-two cases of acute rhinitis. It was not alone in these cases, but apparently predominant and was thought causal. My percentage is not so high as Cautley's, Prosser-White's or Benham's, but it is higher than Allen's, and this, as will be brought out in a later specific report

TABLE 2.—ETIOLOGIC SUMMARY *

| Classes of Organisms. | Variety. | Per Cent. | Acute. Probably Alone Causal. Per Cent. | Acute. Probably Causal, But Not Alone. Per Cent. | Acute. Total Probably Causal. Per Cent. | Acute. Possibly Causal. Per Cent. | Chronic. Probably Alone Causal. Per Cent. |
|---|---|---|---|---|---|---|---|
| Pyogenic cocci:—Staphylococci | | 56 | | | | | |
| | Giant micrococci Gram-positive | 12 | | | | | |
| | Streptococci | 5 | | | | | |
| | | 73 | 0 | .. | 0 | 24 | 0 |
| Diphtheroids:—Segmentosus | | 35 | | | | | |
| | Unclassified | 5 | | | | | |
| | Yellow bac.† | 4 | | | | | |
| | Brown bac.† | 1 | | | | | |
| | Salmon bac.† | 1 | | | | | |
| | | 46 | 22 | 19 | 41 | 0 | 0 |
| *Micrococcus catarrhalis* | | 20 | 7 | 13 | 20 | 0 | 0 |
| *B. mucosus capsulatus* (Friedlander) | | 7 | 0 | 0 | 0 | 2 | 5 |
| Pneumococcus (Fraenkel) | | 7 | 7 | 0 | .. | 0 | 0 |
| No growth | | 4 | 0 | 0 | .. | 0 | 0 |
| Diplococci—unclassified Gram-positive and Gram-negative | | 6 | 0 | 0 | .. | 3 | .. |
| Pyocyaneus | | 3 | 0 | 0 | .. | 1 | 2 |
| Influenza "Beta" | | 2 | 1 | 1 | 2 | 0 | 0 |
| Gram-positive streptobacilli | | 3 | 0 | 0 | .. | 0 | 0 |
| Miscellaneous organisms | | 10 | 0 | 0 | .. | 0 | 0 |

* Based on conclusions of literature and my own clinical and bacteriologic observations.
† Named from color of growth on blood-serum; classified by morphology.

5. Arch. f. Ohrenh., xxxviii.
6. Politzer: Diseases of the Ear, p. 373.
7. Axenfeld-MacNab: Bacteriology of the Eye, p. 231.
8. London Local Govt. Rep., 1894-95.
9. London Local Govt. Rep., 1901-02.
10. London Local Soc. Rep.
11. Brit. Med. Jour., May 6, 1906, p. 1023.
12. Lancet, London, November, 1908, p. 1591.

on the organism, may be accounted for by the fact that all but Allen's studies were taken from epidemic periods. Allen's was part of a research covering four years, and mine, a greater number of cases than all of the others combined, also covered a longer period and may thus be inclusive of epidemics. Attention is also called to the fact that Benham's 90 per cent. occurred in the months of November and December and in mine, if the occurrence in autumn months were taken out, a high percentage would be obtained, that is, in epidemic form. It is also interesting to note that, during the past two months (spring), we have not obtained from any of the many cultures in acute rhinitis a single specimen of *B. segmentosus*, though we have tried every case for it in hopes of showing a fresh culture for inspection. It seems from these facts that possibly this bacillus is epidemic in the autumn months.

The addition to this list of twenty-five or thirty new cases, worked out since this report was closed, would alter the percentages, adding materially to the next-mentioned organism, *Micrococcus catarrhalis*, fifteen or twenty, and to a new tiny diplococcus, Gram-negative and so far unclassified, eight or ten cases, thus reducing the preponderance of *B. segmentosus*.

The evidence is much in favor of the *Bacillus segmentosus* as a primarily etiologic organism in rhinitis. As to its being a distinct bacteriologic organism, however, there is some doubt, since its margin of differentiation[13] from the *Bacillus xerosis* and the *Bacillus septatus* of Gelpke,[14] both of which are innoxious to the conjunctiva, is small and both may be identical therewith. From secretions it is a slow grower, sometimes appearing only after three days; it does not liquefy gelatin and it grows in discrete colonies with serrated edges. In subcultures it grows more rapidly and coalesces.

Clinically it is quite characteristic, starting nearly always in the throat after a few hours' incubation, and passing to the nose. It has been recovered five times from the ear in twenty-six cases of acute otitis; it was found in one case of sinusitis and has persisted for over a year with *Mucosus capsulatus*—seventeen cases examined—and was obtained three times from cough cultures; so that it may be said to have a strong predilection for the nasal mucosa, where it develops an acute reaction, typical rhinitis, with little or no tendency to chronicity. Counting out the cocci and other organisms known not to be causal in coryza, it may be said to be the only causal organism present in 19 per cent. of cases examined, occurring also eleven times with *Micrococcus catarrhalis* and five times with other possible causal bacteria.

The other diphtheroids are few numerically, but some of them are severe in their manifestations; one, Case 78, not reported in this list, in which was found the yellow bacillus like that in Cases 79, 92, 100 and 104, all severe, produced the most nearly fatal rhinitis and otitis I have seen, with temperature range from 106 to 96. This case I intend to report specifically.

### *Micrococcus Catarrhalis*

This Gram-negative coccus is misnamed, because it is wrong to convey such an impression of mild and benign character as is given by such a name. In some ways it seems the most dangerously infectious of all the bacteria, because of its prevalence, its capacity for wide-spread growth on the mucosa, its recently proved ability to cause meningitis, its clearly infectious character and the frequently caused painless otitis media caused by it.

It is noted in 20 per cent. of rhinitis and may be considered as alone causal in 8 per cent. Noted epidemiologically since the closing of this report, that is, in the months of April and May just passed, this percentage would be about 60 and the addition of these last cases to our list of 100 would increase its presence alone from 8 per cent. to 18 per cent. In the whole research its presence is noted in thirteen cases of throat and trachea and seven cases of suppurative otitus. In symbiosis with the *Bacillus segmentosus* there seems to be an exaltation of virulence.

When found in otitis media suppurativa in pure culture it has produced less pain and has undergone resolution following paracentesis more quickly than any other infection that has come to my notice. In the ear it is quite likely to abort.

There is not much in the literature on the subject of this organism. We have been able to differentiate several strains of quite characteristic action and reaction, but into that I am not prepared to enter at this time. Attention may be called in passing to its morphologic and, in some strains, culture similarity to the meningococcus on one side and the gonococcus on the other.

I believe that there has been an epidemic of *Micrococcus catarrhalis* infection in Chicago this winter and spring. In the winter epidemic and in tracheal infection generally it seems most persistent, but in this spring's epidemic (not reported here) it has been mild and self-limited. Some of the series we have encountered since this report culture differently and may prove to be another organism of the same group.

Lastly, attention is again called to its recovery post mortem from an increasing number of cases of meningitis and to the fact that its proneness to cause slight subjective disturbance may account for many an obscure case of meningitis of nasal or aural genesis.

### *Bacillus Mucosus Capsulatus* (*Friedlander's Pneumobacillus*)

It has been a matter of surprise to note almost complete absence of this organism in acute infections, because I was prejudiced in favor of its finding in the beginning of the study. None of the observers whom I have quoted, however, with the exception of Allen, have found it in the epidemic investigated. If I had not spent some time in Allen's laboratory and become familiar with his method of working, and if I did not know his thoroughness as a bacteriologist, I would doubt the possibility of its causing acute rhinitis, since we have found it present so rarely and then, with two possible exceptions, confined to chronic cases. Allen reports Friedlander in thirteen of his forty-two cases, but by his table it may be considered as alone causal of acute rhinitis only in six cases, or 14 per cent., as against Von Besser's[15] 2.5 per cent. and Lewis and Turner's[2] 4 per cent. for normal noses.

Attention is called to the fact that authorities have come to consider the ozena bacillus[16] of Lowenberg and Abel[17] as identical[18] with the pneumobacillus of Friedlander, since they are alike morphologically, in staining reaction, and in nearly all of their cultural peculiarities as well as their pathogenicity for animals. In four of my cases the diagnosis of ozena would properly be made;

13. Axenfeld-MacNab: Bacteriology of the Eye, p. 29.
14. Arch. f. Ophth. (Graefe's), 1896, xlii, 97.
15. Beitr. z. path. Anat. u. z. allg. path., 1889, vi, 33.
16. Jordan: General Bacteriology, p. 252.
17. Wassermann-Kolle's Handbuch, 1903, iii, 870.
18. Axenfeld-MacNab: Bacteriology of the Eye, p. 242.

two of them were seen by other men and were so diagnosed. I reported it as possibly causal in two acute cases.

*Pneumococcus—Fraenkel*

None of the articles quoted in this report mention the finding of the pneumococcus in acute rhinitis, which seems rather remarkable, particularly for Allen's research, which covered four years and would, one would imagine, report some findings. Hesslauer[3] gives the enormous percentage of 49.7 and R. O. Neumann[4] 22 per cent. for abnormal noses, but neither states what sort of cases he reports. It is certainly a very frequent cause of acute infection in this climate. Pneumococcus infection in the eye is quite common and it acts like my reported Case 137, in that as soon as the pneumococcus disappears the staphylococci become more obvious, appearing in large numbers.

Patients with this infection are severely ill. These cases constitute many of those which are diagnosed as grip. Especially is it noteworthy, though I have not seen it mentioned anywhere, that these infections frequently terminate by crisis. I believe that Axenfeld noted it in relation to pneumococcus eye infections, but the reference is mislaid.

Several instances have been observed in which typical pneumonia temperature range was exhibited without, so far as could be ascertained, any pulmonary involvement. This is an intensely interesting observation and is recommended for consideration.

Attention is also called to the fact that, in all cases in which pneumococcus is present, it is in pure culture, barring a notation I have already made, that staphylococci precede and follow its activity. These observations have raised many interesting points that may not be entered into at this time.

*Bacillus Pyocyaneus*

I have seen no mention of pyocyaneus in relation to nasal infection. It must be very rare, and English confrères with whom I talked are of the opinion that it probably grows in structures deeper than the mucous membrane.

*Morax-Axenfeld and Koch-Weeks Bacilli*

Morax-Axenfeld and Koch-Weeks bacilli have been very commonly observed by others, but I have seen them only the three times mentioned.

*Influenza "Beta" Bacillus*

The influenza "beta" bacillus presents many points of interest. I call it influenza "beta" because it is not the influenza bacillus, but belongs to this group. It should have more extended study.

The other organisms are probably of accidental occurrence and not worthy of note.

*Influenza Bacillus—Possibility of Failure*

It is especially interesting to call attention to the fact that in 250 cases examined the influenza bacillus has not been encountered once, nor was it noted by any of the English observers whose reports go back several years, except in an epidemic on the Riviera, in which the pneumococcus is reported as causal with *B. influenzæ, M. catarrhalis and paratetragenus.* This is surprising in view of the fact that diagnosis of grip colds have been made daily from clinical manifestations by physicians and specialists all over the country these years.

I report in this series four specimens in which no growth occurred and from whose smears no diagnosis could be made. This reveals the fact of the possibility of error in this research to which I previously called attention, namely, the fact that all cultures were made on Loeffler's blood-serum mixture.

It is pretty generally understood among experts on the subject that the influenza organism grows poorly on blood-serum unless some hemoglobin be present and, although there have been no cases which could clinically be adjudged influenza, it is possible that, had we used hemoglobin containing media for the influenza group (so-called hemophile pole bacteria) which grow with certainty only on them, we should be more certain as to the occurrence of influenza.

In like manner errors may have occurred with relation to the pneumococcus, although it is much more easily recovered from smears, had we used some such formula as that of Wertheim, on which organisms such as gonococcus and pneumococcus and Koch-Weeks bacillus grow best. It is also possible that better results might be obtained for the *Micrococcus catarrhalis* with the so-called nasgar mixture recommended by Wasserman.

These various media we may employ for future research.

No such objection may by any possibility obtain as to the limited finding of pneumobacillus of Friedlander, for on blood-serum it will outgrow any organism known to us, colonies growing to the size of a silver quarter while the *B. segmentosus* is grown to pin-point.

CONCLUSIONS FROM THE RESEARCH

The evidence seems indicative that the diphtheroids, particularly *Bacillus segmentosus* of Cautley, are concerned in the production of so-called common cold in its typical manifestation in the nose, and there is much evidence that it occurs in epidemic form.

The *Micrococcus catarrhalis* is much more general in its manifestation, and is, probably, also epidemic and productive of a rather more severe inflammation, though mild epidemics occur.

It seems likely that the symbiosis of these two organisms increases the virulence.

The pneumobacillus of Friedlander is much more concerned in chronic conditions and is probably identical with the ozena bacillus.

The pneumococcus of Fränkel flourishes in any part of the upper respiratory tract and, when virulent, has been found in pure culture.

Clinically the segmentosus infection is most likely to be in the nose, seldom in the trachea, but may cause otitis media; *Micrococcus catarrhalis* is most apt of all to invade the larynx and trachea, but may occur in the ear or nose and with variable virulence. The pneumobacillus is mostly confined to the nose and sinuses.

Influenza is conspicuous by its absence.

Pyogenic cocci are non-pathogenic locally, except as secondary invaders, and the probability is that only a limited number of strains are concerned in causation of acute infections on the mucosa, and these are not genuine coryza.

The bacterial flora of the nose in America probably does not differ materially from that of other countries, but must of necessity be governed largely by environment, occupation, social position and epidemics as to the ratios of finding.

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## ABSTRACT OF DISCUSSION

DR. E. R. LEWIS, Dubuque, Iowa: In considering the pathologic conditions of the nasal and accessory nasal tissues, it must be remembered that a majority are due directly to infections, and of the remainder a large number are due indirectly to preexistent or coexistent infections. The subject of Dr. Walter's paper is, therefore, of practical interest to all who have to deal with these conditions. Inasmuch as there are involved two widely differing antagonists, the invading organism and the invaded tissues, analysis must proceed from two widely differing standpoints, that of the bacteriologist and that of the clinician. Observations which are to form the basis for deductions as to the bacteriologic or the clinical side of the matter must be made by experts and the bacteriologic expert should not dwell in the body of the clinician, and *vice versa*.

Among the deductions, certainties may or may not present; uncertainties are bound to. Undue emphasis should be spared the former and accorded the latter.

The fundamental reasons underlying the immunity of certain tissues and the susceptibility of other tissues apparently similar, in the same individual, to the same infection, may not be forthcoming. For instance, a gonococcus, bathing in mucous emulsion the newly born head, harms not the oral mucosa, or the nasal mucosa, but does attack the ocular mucosa. Yet that same oral mucosa, scatheless from its encounter with the gonococcus, falls easy prey to the leptothrix or saccharomycetic infections, which in turn do not attack the conjunctivæ; the same nasal mucosa offers but weak resistance to pneumobacillus or streptococcus. Why? The Morax-Axenfeld bacillus conjunctivitis proceeds uninterrupted in the presence of bichlorid of mercury or silver salts but succumbs to zinc sulphate, whereas the more virulent gonococcus conjunctivitis subsides under the influence of silver salts but is not affected by zinc sulphate. Why? Questions like these must remain unanswered until careful investigations, patiently pursued and zealously guarded against error, shall have built up little by little a knowledge of the subject founded on truths proved by oft-repeated observations. I wish to express the appreciation which I am sure we all feel in regard to Dr. Walter's patience and energy.

I want to voice a suggestion concerning nomenclature which may be of some practical value. In speaking of the pharyngitis, tonsillitis, or rhinitis due to the *Bacillus diphtheriæ*, we are wont to use the terms nasal diphtheria, diphtheritic tonsillitis or diphtheritic pharyngitis. In speaking of other forms of pharyngitis, tonsillitis or other inflammation specified according to site, of known etiology, should we adopt the custom of using etiologic terms, it seems to me we should have made a step in advance, albeit a small one.

DR. W. S. ANDERSON, Detroit: Why do infections of the mucous membrane of the lower respiratory tract occur? We all have patients who very seldom have an acute cold, and we have other patients who repeatedly have acute colds. We know that the lower animals are comparatively free from these infections. Why? What is there in the normal mucous membrane of some persons that resists infection while that of others does not? As I understand it, the normal respiratory tract is sterile, or nearly so. In the nose there are always a few micro-organisms but they do not thrive on a healthy mucous membrane. Going downward we find fewer and fewer germs until the tract below the vocal cords is always sterile in a healthy subject. But, in the presence of an acute cold there will be an abundant growth of organisms along the whole respiratory tract. Why? I have done some work in animals and it is easy to show that the lower respiratory tract is sterile but in many conditions it becomes infected. The mere closing up of the nose of a dog will be followed by a copious growth in the lower respiratory tract. Now we are coming to believe that many of the infectious diseases gain entrance through the mucous membrane of the respiratory tract, meningitis, diphtheria and so forth. In many of these there are local lesions of the mucous membrane, and yet if you attempt to reproduce these lesions in the lower animals you will fail. I have tried over and over again with the Klebs-Loeffler bacillus and have always failed, and yet if we inject the organisms into the blood of the animals, they will die immediately or in twenty-four to forty-eight hours. The same thing occurs with the organism of pneumonia. If you rub it on the mucous membrane of the respiratory tract you will get no results at all. Why is the membrane in some cases so resistant? If we could learn what the local condition of the respiratory tract is that favors infection it would explain a great many conditions.

DR. WILL WALTER, Chicago: Infection of the normal mucosa was not investigated but I reported the investigations of others who compare the normal with the abnormal. As to resistance to infection, of course there is the local resistance and the general immunity to be considered. There is also a variation in virulence of infectors and doubtless a specific local resistance. These are the problems which the laboratories of the world are trying to solve and which may not be answered offhand. In obstructed noses we have from mechanical causes practically a stasis and hence lowered local resistance. The opsonic index may be as high as 2 or 2.50 and still you get infection because of this stasis and the consequent poor local resistance. If the nose is shut off from its function by such abnormalities or by being held closed infection naturally occurs lower in the tract. Protection against such infection is one of the reasons for the existence of the nose.

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# A CLINICAL STUDY OF A CASE OF PSEUDO-LEUKEMIC ANEMIA OF INFANCY (VON JAKSCH) *

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In 1889, von Jaksch proposed the term "anemia pseudoleukemica infantum" to designate a pathologic picture characterized by oligocythemia, oligochromemia, considerable permanent leukocytosis, enlarged spleen, slightly enlarged liver, and, sometimes also, enlarged lymph-nodes. Its identity as a distinct disease has been seriously questioned by some authorities on diseases of the blood. Notwithstanding, however, we find in a certain number of infants suffering from a severe form of rachitis or hereditary syphilis, a symptom-complex which is entirely apart from the pre-existing disease.

A number of German authors, Japha, Fischl and Geissler and also some Italians include the grave infantile anemias in the secondary anemias with a toxic basis, practically as a middle condition between anemia and leukemia. Japha does not regard the spleen as the primary focus, and is of the opinion that it has nothing to do with the regeneration of the blood; this is based on the fact that the enlargement frequently becomes reduced before the blood-picture has become normal, while the extent of the enlargement does not correspond to the gravity of the anemia. Japha also believes that deficient new formation of blood constitutes the nature of the affection. At the same time, there may be an exaggerated destruction; but there are only a few cases in which the anemic (granular) degeneration of the red corpuscles is found as a positive evidence of blood poison.

A very notable work on this subject by Banti appeared in 1883. He believed that anemia splenica was a primary disease of the spleen, but he also considered it a splenic form of leukemia. In the case studied and described by him, there were marked fibrous changes in

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

the trabeculæ and the follicles of the spleen; and a great diminution of the cells. There were many phagocytic cells containing red corpuscles; the bone-marrow was red and showed a lymphoid condition, but the lymph-nodes were enlarged. The spleen weighed 2 pounds, 7 ounces; the liver weighed 2 pounds, 12½ ounces. The blood showed a diminution of leukocytes and the red corpuscles were between 2,000,000 and 3,000,000 per cubic millimeter. Koplik reports nine cases in which the blood-picture was as follows:

The hemoglobin ranged from 28 to 65 per cent.; the count of red blood-cells or erythrocytes fell as low as 1,400,000 and in others was as high as 4,448,000; and the leukocytes ranged from 5,200 to 40,000 and 80,000 to the cubic millimeter. In all cases there were nucleated red blood-cells, normoblasts and megaloblasts from 7 to 15 per cent. In some cases the white cells varied from 10,000 to 80,000 to the cubic millimeter in a given case, with erythrocyte count of 2,699,999 to 3,799,999.

He regards von Jaksch's anemia as a severe secondary anemia with or without marked leukocytosis.

Monti and Berggruen report 20 cases. In six of these the red cells were below 1,600,000. Four cases proved fatal; one recovered in which the proportion of leukocytes to the red cells had been 1 to 12.

*History.*—The case which I observed was that of a male child aged 13 months, admitted to the children's ward of the Allegheny General Hospital, Pittsburg, Aug. 4, 1909. The father and mother are both of German parentage and are apparently in good health. There is no history of tuberculosis or syphilis. The patient was one of twins; the other died at the age of 2 months from diarrheal affection. The patient had always been a weak and delicate baby. He was breast-fed for a few weeks only, and then fed on various foods, principally condensed milk. He had always been pale and cries a great deal. He had never been known to smile.

*Examination.*—The child was very poorly nourished and anemic. His expression was often anxious; but, as a rule he seemed apathetic. The skin was dry and flabby. Numerous purpuric spots were seen in various parts of the body, particularly in the legs and over the right iliac region. There was considerable enlargement of the lymphatic glands in the cervical, axillary, and inguinal regions. The abdomen was distended. The anterior fontanel was open and about the size of a twenty-five cent piece. The child had but six teeth. The epiphyses of the forearms were enlarged. Rachitic rosary, well marked. Examination of the chest revealed a subacute bronchitis. The heart-sounds were clear and distinct. The liver was found to be enlarged, extending several finger-breadths below the costal cartilages. The spleen was enormously enlarged, the tumor extending far below and to within half an inch of the umbilicus. The notch of the spleen could be felt plainly. There seems to be some pain on palpation. Examination of urine was negative. The examination of the blood showed 27,500 whites, 2,500,000 reds and 45 per cent. of hemoglobin.

*Course of Disease.*—The foregoing is a description of the condition of the patient on admission to the hospital. He remained in the institution until the time of his death, Aug. 26, 1909, twenty-two days after admission. The progress of the disease was rather rapid and influenced to a considerable degree by intercurrent affections and conditions.

Temperature: On admission, his temperature was slightly above normal, but during the course of the disease varied from 101° to 104° F. partly due to a bronchopneumonia and a purulent inflammation of the middle ear, which occurred on the tenth and twelfth days, respectively, after admission.

Pulse: The pulse was rapid, never below 120, but, until shortly before his death, of fair quality.

Weight: From 15 pounds and 9 ounces, the weight fell rapidly to 13 pounds during the first week. Later there was a gain of about half a pound, which was followed by a rapid decline, reaching 11 pounds on the day of the patient's death.

Skin: In addition to the purpura, which remained and increased throughout the course of the disease, marked icterus was present shortly before death.

Lungs: While, on admission, only a few coarse râles could be heard over his chest, evidences of a bronchopneumonia were present on the tenth day and continued up until the time of his death.

Digestive System: Vomiting and diarrhea occurred frequently. It was extremely difficult to find any food which would agree with the patient. Whey and barley-water were about the only things which he retained.

Urine: At first the urine was normal, but later after the administration of arsacetin[1] it contained a large amount of albumin, also a few hyaline and granular casts.

Blood: As stated above, at the time of admission, the patient had 27,500 whites, these gradually became reduced to 16,000; the reds were 2,500,000 and were reduced to 2,287,000. The hemoglobin remained about the same, 45 per cent.

Differential count:

| | |
|---|---|
| Neutrophils | 6.50 per cent. |
| Small lymphocytes | 61.00 per cent. |
| Large lymphocytes | 18.63 per cent. |
| Transitionals | 1.47 per cent. |
| Eosinophils | 0.28 per cent. |
| Basophils | 0. per cent. |
| Neutrophils myelocytes | 1.18 per cent. |
| Eosinophils myelocytes | 1.18 per cent. |
| Normoblasts | 9.76 per cent. |
| Poikilocytesis | .... per cent. |
| Polychromatophilic red cells | .... per cent. |

*Therapy.*—The treatment at first was directed entirely to the digestive organs, calomel and bismuth being employed. Later the patient was given arsacetin hypodermatically in doses of 0.05 (gr. ¾) but, on account of the occurrence of albuminuria had to be discontinued. In addition, iron and stimulants were given.

*Summary of Clinical Symptoms.*—Rachitis, enormous enlargement of the spleen, moderate enlargement of the liver and lymphatic glands, purpura, icterus, bronchopneumonia, otitis media, gastro-intestinal indigestion, albuminuria.

*Autopsy.*—This was made by Dr. F. Proescher, Pathologist, Allegheny General Hospital.

Spleen, Macroscopic Examination: The spleen measured 10 cm. (4 in.) in length, 8 cm. (3.2 in.) in breadth, and 5 cm. (2 in.) in thickness. It weighed 163 gm. (5 oz. 15 grains) and was therefore about seven times the natural size of the spleen of an infant at that age. Its consistency was firm and it was deeply notched at the lower end. The surface was mostly of a light red color, but in some parts, a dark blue discoloration was seen. On section it was found to be of tough consistency. The follicular markings were obliterated. Numerous irregular but not sharply-defined areas were to be seen. These were about the size of pin-heads, of a grayish white color.

Spleen, Microscopic Examination: The capsule, as well as the trabeculæ, was thickened. The connective tissue was deficient in nuclei and hyaline in appearance. The follicles were completely obliterated. Most remarkable was the great interstitial fibrous induration, which had caused almost complete obliteration of large areas of the pulp. This induration was seen to be partly in the shape of large, irregularly scattered areas of greater or less thickness, with remnants of pulp tissue, still enclosed; or, in the form of diffusely scattered, isolated fibers, traversing the entire pulp and passing between the pulp cells. These were exceptionally well defined by the Van Giesen staining. Both the smaller and larger vessels also showed considerable fibrous induration, especially the tunica adventitia, which was enormously thickened. In some places there was also a proliferation of the intima, which led to complete occlusion of the lumen. The enormously thickened adventitia presented a marked tendency to hyaline degeneration. The fibers of the connective tissues were conglomerated into hyaline masses

1. Arsacetin is sodium acetyl arsanilate, a compound derived from sodium arsanilate. It is claimed to be less toxic than sodium arsanilate and to possess the advantage of keeping well and being sterilizable without decomposition. Adult dose.—0.1 gm. (1½ grains) to 0.05 gm. (7½ grains.) For internal administration 0.05 (¾ gr.) 3 to 4 times daily. See N. N. R., 1910, page 36.

containing no nuclei. The lumina of the majority of the blood-vessels were empty, but, where they were filled with blood, erythrocytes pale and indistinct were found, beside which were seen many mononuclear and a few polynuclear cells.

In addition, there were seen cavities, either scattered or in groups, or even long and winding, and lined by a single layer of spindle-shaped endothelial cells. They were enclosed by a dense ring of round cells, some of which were surrounded by a thick hyaline non-nuclear tissue. That we were not dealing with blood-vessels was established by the fact of the uniformity of structure of the surrounding tissue, which allowed of no distinction of the different layers of the blood-vessels. We were in all probability dealing with a cystic dilatation of the lymph spaces. The pulp consisted of numerous blood-cells and round-cell elements of varying sizes, averaging from 3 to 6 microns in diameter. These mostly showed a round or slightly lobulated nucleus, with scanty protoplasm. Some of the nuclei were rich in chromatin, others showed only a framework of chromatin; many of the large mononuclear cells showed eosinophil granulations. In addition, a few spindle-shaped cells resembling endothelium cells were found. Large giant-like cells with phagocytic enclosure of red blood cells were scarcely seen.

Liver, Macroscopic Examination: The liver was 9 cm. (3½ in.) in length, 16 cm. (6½ in.) in breadth, 4 cm. (1½ in.) in thickness and weighed 345 gm. (11 oz. ¾ drams). It was of firm consistency, its edges were sharp and the color a yellowish red in some places, while in others it was more of a yellowish color. On section it was of a bright yellow or red color. The acinous delineations were quite plainly visible. At the periphery the acini were of a sulphur yellowish color; but, in the center more of a yellowish red and cloudy. Throughout the entire parenchyma there were numerous punctiform hemorrhages. The vessels were not enlarged. The tissues were moist and on pressure a thin, bloody fluid exuded copiously. The gall-bladder contained a large quantity of tough yellowish green bile.

Liver, Microscopic Examination: The parenchyma of the liver showed extensive tough infiltrations, especially the middle acinous zone. The liver cells in the center of the acini showed parenchymatous degeneration, partly sclerotic, partly necrotic. Irregularly scattered were seen larger and smaller hemorrhages (extramedullary blood formation) as well as larger and smaller round cells, with deeply stained nuclei. Some of these were round, others lobulated. The periportal connective tissue was very much thickened and infiltrated with round cells; also the walls of the hepatic artery and portal vein. Van Giesen's stain showed regularly distributed interstitial induration.

Kidneys, Macroscopic Examination: The two kidneys together weighed 100 gm. (3½ oz.); adrenals 6 gm. (90 gr.). The renal capsule was easily detached. The surface was lobulated and of a pale yellow, with numerous punctiform hemorrhages. On section the cortex was found to be enlarged, of a pale yellow color and slightly protuberant. The cortical marking was only present in form and was very much obliterated. Small white stripes were visible. The pyramids were somewhat more sharply defined by a more yellowish color. The left kidney presented practically the same appearance as the right one, but was somewhat redder in color. The mucous membrane of the renal pelvis was pale, with numerous punctiform hemorrhages.

Kidneys, Microscopic Examination: Both kidneys showed severe parenchymatous degeneration, with extensive necrosis of the epithelium. Slight hemorrhages into the glomeruli and uriniferous tubules were found. Hyaline masses were found in some of the canals, especially in the collecting ducts. On frozen section and with the Sudan stain fatty morphosis was found in some of the tortuous and straight uriniferous tubules.

Heart: The heart weighed 50 gm. (1⅓ oz.) and was well contracted. The musculature was of a cloudy, gray, yellowish color. Numerous small hemorrhages were found beneath the epicardium. The valvular apparatus was intact, the foramen ovale closed. The intima of the large vessels, as well as that of the valves, was slightly discolored, a yellowish green.

Lungs: The lungs weighed 175 gm. (5 oz. 125 gr.). Right lung: In the upper lobe there was an irregular slightly depressed circumscribed spot about the size of a twenty-five-cent piece. The spot was discolored and dark gray in appearance. In the lower lobe there was also a spot about the size of a ten-cent piece, which was also depressed and dark gray in appearance. On section the entire pulmonary parenchyma seemed to be studded with the above-described areas. It was entirely airless, and on pressure a dark red turbid fluid exuded. Left lung: In the upper and lower lobes similar areas were found.

Stomach: The stomach contained a small quantity of fluid. The mucous membrane was atrophic and showed numerous punctiform hemorrhages.

Bowels: A small quantity of greenish white masses were found in the duodenum. The mucous membrane of the jejunum was also atrophic. In the colon a large quantity of fluid and dark green feces were found. The mucous membrane of the transverse colon was very much injected; that of the ascending and descending colon was pale.

The autopsy findings in this case correspond closely to those in the case described by Banti. Here we also find the fibrous changes in the trabeculæ and the follicles of the spleen, and a great diminution of the cells. We also have a diminution of leukocytes and the red corpuscles.

The diagnosis of this case as belonging to the class of cases described under the term of pseudoleukemic anemia of infancy can scarcely be questioned. The low leukocyte count, the diminution of the red blood-corpuscles below half the normal, together with the enlargement of the spleen, moderate enlargement of the lymph-nodes distinguishes it from leukemia and simple or pernicious forms of anemia. Whether this case is to be considered a secondary anemia in connection with the rachitis with a toxic basis; or, as a distinct organic disease, it is difficult to decide. The organic changes in the spleen and liver would indicate a primary diseased condition of that most important blood-making organ, the spleen. The evidence seems about equally divided and in view of the fact that so far but few autopsies have been recorded in these cases, it is impossible to come to any definite conclusion in this single case. I hope that by having carefully studied and recorded the findings of this interesting case I have added a small mite to the literature of this important disease.

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## ABSTRACT OF DISCUSSION

DR. J. F. HULTGEN, Chicago: In the last few years I have had a number of similar cases which have made me think a good deal of this question. The case just reported undoubtedly belongs to that class of anemias of infancy which we call, for want of a better name, pseudo-leukemia. Some of my recent cases have shown a combination of leukemic and leukanemic changes; that is, not only very marked qualitative and quantitative changes of the leucocytes, but also marked alterations in the number and form of the red blood-corpuscles. Others run into a true leukemia and end in death. Dr. Elterich's case does not belong to this last special class and I am glad he mentioned that. Assuming that all the leukocytes develop from the small lymphoid cell, those infections characterized by specific changes in the blood must be due to an irritation of the leucogenic system. Whether or not this condition is recognized at an early stage, or advances to a splenic anemia or Banti's disease before it is diagnosed makes no difference. It is the same disease, only a later stage. I think we are almost smothered by a multitude of names in the description of the so-called pseudo-leukemia of childhood. Any severe dis-

turbance of the infantile leucopoietic system may in the first place produce partial or complete leukemia. Whether we have a polynuclear or a mononuclear or a lymphatic leukemia, does not alter the case. It simply depends on the hastening or the slowing of the processes of maturation of the lymphocytes. Later on, after months or years the patients come to our offices, and finding a large spleen, ascites, etc., we call it Banti's disease. The pathogenesis of infantile pseudo-leukemia does not reside in the spleen alone. It depends on infectious, or toxi-infectious lesions of the lymphoid tissues. I think it is easy to believe that as long as there is some leucopoietic tissue left there may be an acute leucogenic crisis. The blood examination then would show a leukemia. A blood examination made later on will likely show a splenic anemia, or an *anémie primitive* of French writers, a leukanemia, or Banti's disease, etc. Or the patient may go on to a pernicious anemia. This is also easy to understand if we consider that in irritation of the leucopoietic cells we must also have a hematopoietic irritation. I think that all these anemias should be looked on as the results of an infection of the lymphoid or leukopoietic system in the gastro-intestinal canal, which may or may not be noticed at the time of its occurrence. Its various forms are nothing but the variations common to all individuals. In childhood the death of these patients is due to exhaustion. Perhaps there are toxic symptoms, but they usually die with the clinical picture of asthenia, though this is often preceded by bronchopneumonia. I think the abdominal symptoms are always at the bottom of this condition, though they are not usually recognized.

DR. C. F. WAHRER, Fort Madison, Iowa: I have seen three cases that would come under the author's name of the infection. The first patient, after five months, died. The second after three months died, and the third recovered. The recovery may throw a little doubt on my diagnosis, but I did the best I could with the means at hand. We had a symptom-complex of an affection that we may class under the diagnosis named by the essayist. The children all had the symptoms that have been named briefly by the author. There was anemia, there were purpuric spots and a history of syphilis in the ancestry of the first two; in the last one, a gastro-enteric trouble with numerous and profuse hemorrhages from the intestinal canal. The treatment in the first two cases was addressed chiefly to the origin of the disease, *i. e.*, the syphilitic condition, and in the last case it consisted mainly in the administration of Fowler's solution, iron and remedies addressed to the gastro-intestinal tract. This child, after ten years, is still in perfect health.

DR. THEODORE J. ELTERICH, Pittsburg, Pa.: I am not in a position to classify these cases according to their pathologic findings. I had only one case in which the diagnosis seemed positive. In one or two other cases no blood count was made and the patients died before they could be removed to the hospital for observation. The symptoms were those of rickets, with an enlargement of the spleen and anemia.

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# CHOKED DISC IN ITS RELATION TO CEREBRAL TUMOR AND TREPHINING *

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When I was invited to be the guest of the Section on Nervous and Mental Diseases of the American Medical Association, and to read a paper before this famous body, I felt highly honored, and it was with the greatest pleasure and thanks that I accepted this invitation. Having leave to choose the subject I did not hesitate long and selected the important theme of choked disc in its relation to cerebral tumor and trephining.

There is hardly any point which has for so long a time been subject to as much controversy as the pathogenesis of choked disc. In spite of numerous works, experiments, clinical observations and pathologic-anatomic investigations, we have not succeeded in bringing about an agreement between the various investigators on this topic. Just lately the old quarrel on the pathogenesis of choked disc has become active again in Germany.

Surgical experience being, to my mind, of great importance for clearing up the origin of choked disc, I was convinced that America would be the best forum for discussing this question, because America possesses a greater experience on the effect of and indications for trephining in cerebral tumor than we do in Germany, thanks to the studies and works of Taylor, Mills, Spiller and Frazier, De Schweinitz, Weisenburg, Putnam, Knapp, James Bordley and also to the new methods of Harvey Cushing, not forgetting, however, England's contributions, by Horsley, Gowers, Gunn and Leslie Paton.

The fact that I was an ophthalmologist at first and devoted myself to neurology later has brought it about that I have been occupied for twenty years with studying the changes of the fundus of the eye in diseases of the brain.

By request of Professor Uhthoff of Breslau, I made a report on the pathogenesis of choked disc before the seventy-sixth Versammlung Deutscher Naturforscher und Aerzte in Breslau in 1904. Since that date so much new work has been published, that I deem it necessary to give you a brief outline of the stand we take on this important question in Germany.

## REVIEW OF WORK AND THEORIES ON CHOKED DISC

Tuerck was the first, who in 1853, when describing a case of cerebral tumor with retinal hemorrhage expressed the idea, that the changes in the fundus of the eye were due to increase of intracranial pressure. However, only in 1860 the scientific world became acquainted with the so-called choked disc through Albrecht von Graefe's work on complications of optic nerve-inflammation with brain diseases. Von Graefe saw the cause of choked disc in brain pressure, due to cerebral tumor, the sinus cavernosus being thus compressed and the voiding of both the vena ophthalmica and the vena centralis retinæ being inhibited; bringing about dilatation and twisting of the retinal veins as well as edematous swelling of the optic disc. He explained the inflammatory changes, first, as originating from retinal extravasations of blood; secondly, from the irritating effect of swelling of the optic disc, still increased by toughness of the scleral ring.

Von Graefe's hypothesis, however, soon encountered opposition. Hughlings-Jackson took the optical affection for a reflex symptom, but it was the anatomic facts found by Sesemann which principally disproved the theory. It was he who proved that the central retinal vein has an off-flow into the facial veins, quite independent of intracranial pressure. Moreover, Sesemann argued that compression of the sinus cavernosus could not be effected as easily as one might think. Later these statements made by Sesemann in 1869, though accepted everywhere, even by von Graefe himself, have met opposition from the well-known anatomist, Merkel, and from Gurwith, who, on the basis of extensive anatomic investigations, argued that the greatest part of the orbital venous blood flows into the sinus cavernosus. Quite recently J. Tudeich and Krüdener have endeavored to uphold the old theory of von Graefe

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

for those cases of choked disc, in which intracranial pressure is localized.

The second principal theory of choked disc is the one brought forward by Schmidt-Manz's theory of mechanical transportation, based on Schwalbe's discovery of the communication between the intravaginal space of the optic nerve and the intermenjngeal space of the brain. According to the views of both these authors a vaginal hydrops of the optic nerve is caused by increase of intracranial pressure, for instance, owing to cerebral tumor, and consequently, incarceration of the intraocular end of the optic nerve would occur, choked disc henceforth resulting.

Von Schulten, by his experiments, confirmed Schmidt-Manz's theory, which was readily accepted, but soon also vigorously combated.

In 1881 the famous ophthalmologist, Leber, brought forward a new theory of choked disc before the London Congress. According to Leber it is a real inflammatory process, a papillitis, not preceded by any stage of pure edema or pure venous stagnation. The originators of inflammation are in the fluid which has come from the intermeningeal space of the brain into the intervaginal space of the optic nerve. Even though a real hydrops of the optic nerve were absent, yet choked disc could occur, because the point is not the quantity of the fluid, but its quality.

Deutschmann supported the theory of Leber by several works and established the hypothesis that the cerebral tumors produce toxins, which call forth inflammation of the optic nerve and its sheaths.

Besides Hughlings-Jackson, Gowers also was of the opinion that intracranial tumors could cause neuritis optica through irritating influences acting as foreign bodies.

In modern times Zellweger and Elschnig, the latter of whom disposed of twenty-eight cases of choked disc, which he examined microscopically, declared themselves for the Leber-Deutschmann inflammatory theory. Elschnig says, that in intracranial tumors the primary is a neuritis of the optic nerve, whereas edema is secondary and only an accompanying symptom.

Liebrecht, in 1902, is likewise of the opinion that the primary manifestations are inflammatory changes within the optic sheaths, in connection with which a stagnation of the lymph occurs in the optic nerve and disc.

We may quote, among other theories, the one of Parinaud. According to him the various intracranial diseases call forth a stagnation in the optic disc only in the case of complication with hydrocephalus internus. With this is connected edema of the brain, which by itself affects an equivalent edema of the optic nerve This may be followed by inflammation—*neurite œdémateuse*. In the presence of edema of the optic disc, according to Parinaud, the diagnosis of hydrocephalus and cerebral edema only is admissible.

Lourdill accepted Parinaud's theory. However, he considered the primary change to be an edema of the ependymalglia, which continues in a direct way in the glia of the chiasm and of the optic nerve.

Also, according to the opinion of Ulrich (1887) cerebral edema propagates into the optic nerve.

In 1904 extensive researches (forty-six eye examinations) made by Kampherstein from Professor Uhthoff's clinic at Breslau, proved that the most invariable symptom consisted in an interfasciary edema of the optic nerve. For this reason in most cases choked disc is nothing but an edema propagated from the brain, penetrating into the optic nerve, and through it into the optic disc by the way of the lamina, creating hereby incarceration of the intraocular optic nerve-end a swelling within the rigid scleral ring.

Benedict and Adamkiewicz occupy a position apart with regard to the pathogenesis of choked disc. The former believed the vasomotor nerves to be irritated by the tumor, thus causing an inflammation of the optic disc by reflex. The latter regards the choked disc as the result of a neuroparalytic inflammation due to irritation of the trophic centers proper to the optic nerve.

Knapp, Deyl, von Gross and Yamaguchi published cases to prove the causation of choked disc through compression of the central vein.

### PRESENT-DAY THEORIES

In our days we seem to be reaching a compromise. Thus Greeff expressed himself as follows: "It seems to be the case that stagnation of the cerebrospinal fluid plays an important rôle, but that inflammatory irritations are concurring."

In 1907 I published a treatise, in which I pointed out again energetically my views, which I had presented in 1904, viz., that a palliative operation should be performed in cases of inaccessible brain tumor in order to avoid threatening blindness.

### SUMMARY OF CASES

I disposed of nineteen cases. In two of these choked disc decreased only after the trephining hole had been enlarged, allowing a great outflow of cerebrospinal fluid. In two cases decompression had no effect whatsoever as far as the choked disc was concerned. These were cases of extraordinarily large, rapidly increasing brain tumors. In one case only, a tumor of the base, the operation was followed by very high fever and rapid exitus. No doubt it must have been one of those cases which have just been described by Dr. George J. Jacoby in New York, because post-mortem examination did not explain the cause of the hyperthermia.

In all the rest of the cases the effect of decompression on choked disc was obvious.

In one case I was able to observe, as did Cushing in two cases, a decrease of choked disc directly after decompression.

I apply this term in the sense of Frazier, as he explained in an address before the Toronto Academy of Medicine last year. He said: "The term decompression implies not simple trephining, but the removal of the dura.

### DECOMPRESSION OPERATION

In all my cases decompression has been done in this sense. Often I could observe that the choked disc decreased in the measure in which the outflow of cerebrospinal liquor increases. As a rule it takes several weeks or months to flatten down.

In order to obtain good results as far as vision is concerned it is imperative to operate early, viz., while the visual power is still of use. In some cases I have seen vision improve considerably after decompression.

E. von Hippel, in his studies of the literature in 1908, arrived at the same result. He does not, however, give his personal experience.

Philip Coombs Knapp, in 1906, published a vast number of cases in which no tumor was found by operation or in which decompression alone was done. Knapp affirms that the development of choked disc is arrested only in about half the cases. I regret very much that Dr. Knapp is not present. I would ask him whether he

took any notes of the degree of visual power and time of operation. This is the important point.

I indicated as being the best time for operating the very beginning of visual diminution. If the operation is done after this epoch, atrophy of the optic nerve very easily develops, as I have seen several times.

The place to trephine is obviously that point of the skull, under which the tumor is supposed to be.

In case a local diagnosis is impossible I advised trephining on the right parietal lobe. Recently I had the pleasure of conferring with Harvey Cushing in Baltimore about this question, and he had the kindness to show me several cases of decompression by his subtemporal method, and I must say that seldom have I seen such good results, so that I here gladly say that in the future I shall advocate this region for decompression and not the right parietal lobe, as I have formerly recommended, although realizing that the subtemporal operation, though preferable, may be more difficult to perform.

### INOPERABLE TUMOR

What shall we do in such cases, in which an osteoplastic resection after the method of Wagner has been made and an inoperable tumor or a very high tension of brain without surface change is found? The new method of Cushing is very ingenious in combining exploration with subtemporary decompression, as he has described in the transactions of the American Surgical Association.

In subtentorial cases trephining is not so dangerous in my experience as it was thought before.

Spinal puncture, puncture of the lateral ventricles and the so-called Balkenstich procedure (Braman) cannot possibly, in my experience, compare with trephining of the skull as regards results. My conclusions were summed up as follows: Palliative trepanation of the skull according to the modern standing of surgery, in the hands of a skilful surgeon who has experience in neurological work is almost without danger and an extremely beneficial operation, which I should recommend in every case of inaccessible brain tumor, in order to ease the torments of the patient, and above all, to save him from impending blindness.

This standpoint expressed by me first in 1894 and defended in 1902 against the opinion of Bergmann before the Surgical Congress at Berlin, has met with such universal favor in America, that it seems superfluous to mention it specially, as Horsley, Cushing, and others expressed themselves in the same way.

### INCREASED TENSION THE CAUSE

These extensive surgical experiences, however, possess a great value for the conception of the pathogenesis of choked disc. They certainly admit of the conclusion that the main point in bringing about choked disc consists in increased cerebral tension. For in the majority of cases decrease of tension by trephining is followed by disappearance of choked disc, and so quickly, too, at times, that toxins could not possibly have had any influence; particularly in those cases in which the dura has not even been opened.

The subtle process in the genesis of choked disc has remained occult up to date in spite of plenty of experiments and microscopic-anatomic research.

### RESULT OF AUTHOR'S INVESTIGATIONS

I have myself, during the latter years, devoted much time to pathologic-anatomic examinations of choked disc in brain tumor, which we encounter frequently in the Hospital St. Georg at Hamburg.

During these investigations I could also state the fact that in some cases of choked disc a dilatation of the intervaginal space has been missed. Moreover, I have often seen cases of ampulla nervi optici without choked disc. In many cases I found only slight microscopic changes in the optic nerve and in the sheaths, though choked disc was exquisitely pronounced. In other cases, however, I found the space between the fibers of the optic nerve had become wider, allowing the conclusion of the presence of edema, but I was not able to prove it. To my mind the methods heretofore in use for examining choked disc are entirely insufficient, all the more as it is essential to show the presence of edema.

Considering what manipulations must be performed with the optic nerve, more or less bruising it in its removal, it is quite obvious that the results of microscopic examinations, often modified by artificial products, must often give quite varying pictures, which certainly cannot render the subtle conditions *in vivo*. Already the preparation for embedding the nerve in celloidin and letting it rest in alcohol of increasing percentage proves altogether that the optic nerve is being exposed to considerable shrinking processes, altering entirely the conditions which the supposed edema is expected to have caused.

I am trying at present new methods, which should avoid this faulty treatment. At present I am, however, not in a position to report on the results obtained.

I should like to add concerning my microscopic examinations, that in some cases I found ectatic capillaries and even hemorrhages in the optic nerve as well as in the dura. So far as inflammatory changes are concerned, I found in some cases cellular infiltrations between the sheaths, which would have been interpreted according to former views as inflammation. According to the opinion of competent pathologic-anatomic authorities (Prof. Fraenkel and Prof. Simmonds, of Hamburg) these were proliferations of endothelial cells, and therefore not real inflammation. In this way probably the diverging findings of the authors must be understood, some calling inflammation, what others describe as an increase of endothelial elements.

### CLINICAL OBSERVATIONS

Returning to the clinical observations, at present I dispose of twenty-six cases in which decompression has been performed for cerebral tumor.

Seven were cases of tumor of the cerebellum. In one of them a cyst was found, after removal of which the patient got well. Three were cases of tumor of the acoustic nerve (*Kleinhirnbrückenwinkeltumoren*).

One was a tumor of the parietal lobe. In this case there occurred a hernia, as was described later by Cushing, who recommended the establishment of hernia as a decompressive measure for inaccessible brain tumors. The patient in this case continued to live for nine months with good visual power and in good general condition.

Three were tumors of the frontal lobe. In one of the patients there was choked disc in one side only, namely, opposite to the seat of the tumor. Three were cases of tumor of the base. In these cases decompression was of no avail.

In two cases of cerebral tumor decompression only had the advantage of removing headache and vomiting. The patients had become blind already before the operation.

In a very remarkable case in which the patient was operated on for supposed tumor of the cerebellum

(choked disc, cerebellar ataxia, absence of patellar reflexes, occipital headache, vomiting) the result of decompression was very deplorable. The patient died of hemorrhage immediately after and post-mortem examination revealed the total absence of any tumor and the presence of chronic meningitis. A similar observation has been quite recently published by Oppenheim, in Berlin.

No less remarkable are the five following cases: All of the patients presented the symptoms of a brain tumor: choked disc, headache, vomiting; two of them had focal symptoms of hemiparesis of the right side. One showed the symptoms of a tumor of the acoustic nerve. When decompression was performed, there was no tumor found. After trephining and outflow of cerebrospinal fluid the choked disc disappeared and brain tension and its symptoms were effaced.

The first patient, 27 years old, was operated in 1899 and was presented by me before the Surgical Congress at Berlin in 1902. He now is doing very well, with a slight diminution, though, of visual acuteness. He is busy in a banking house from morning to night.

The second patient, operated in 1904, was a teacher in drawing, who was still active until 1909, when actually pensioned off.

The third patient is a boy twelve years old, who had totally lost his sight under the symptoms of brain pressure and choked disc. He was trephined over the parietal lobe with removal of the dura after the method of Wagner in 1909. The boy is absolutely well and one of the best scholars in his class.

The fourth case concerns a man aged 22, with the symptoms of a tumor of the central lobe. Nothing was found during the operation; all symptoms receded, leaving, however, a slight weakness of the right hand. He is now fulfilling the duties of a watchman.

The last case, a man of fifty-six, is also active in performing his business. There was no decompression made, but a puncture of the left lateral ventricle relieved him of all symptoms of brain pressure. Only a slight weakness of the right hand remained.

### THE QUESTION TO BE ANSWERED

The question arises in these cases: Have we to deal with a tumor which has become regressive, or a so-called pseudotumor, such as was described first by my colleague, Dr. Nonne, of Hamburg, or else hydrocephalus internus, or finally Reichardt's cerebral swelling?

In the present state of science it is impossible to answer these questions definitely. Let us hope the time is not far off when by the united work of the neurologists of the New and the Old World this high aim will be achieved!

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### ABSTRACT OF DISCUSSION

MR. J. HERBERT PARSONS, London, Eng.: I hold that the pathogenesis of the disease is a question of edema and not of inflammation. I suppose that we are all absolutely agreed as to the importance and utility of the relief of intracranial pressure in the treatment of these cases, whether the tumor is a so-called operable tumor or not. Of course the important point is the relief of the visual symptoms; and here I speak entirely from the pathologic point of view, and therefore perhaps in a manner not altogether acceptable to the neurologists. I do think that the determination of the time at which interference should take place and the advisability of its interference in these cases, should be determined to a very considerable extent to the ophthalmologists. The fundus conditions are ones with which the ophthalmologist is very much more familiar than the neurologist, and the ophthalmologist can give the neurologist information which is of the utmost importance in assisting him to determine the best time for interference to take place.

I know from many cases that I have seen in England that interference is frequently delayed much too long from the point of view of vision, and in a very large proportion of these cases (a far larger proportion than is at all desirable) the only palliation that can be secured is to give these patients vision during the remainder of their lives, and also to relieve their headaches, etc. That is an enormous boon to the patient. It does not do very much good to interfere in the very last stages.

DR. JULIUS GRINKER, Chicago: The question of whether choked disk is caused by an inflammation or an edema has recently occupied the neurologists of this country, and discussions of this problem have been reported in the journals. Cushing's experiments on animals and his observations on patients before, during and after operation seem for most of us to have settled that point. Others, however, have disputed the contention that edema or mechanical causes are responsible for the so-called choked disk.

About six weeks ago I was consulted in a case in which I made a diagnosis of frontal abscesses. In addition to other symptoms, there was a hazy condition of the fundi oculorum which was verified by an ophthalmologist. An operation was performed, the abscess was drained and apparently completely evacuated. Two or three weeks after the patient had been considered well, however, I was asked to see him again, and to my great surprise, I found a typical choked disk—a finding also verified by an ophthalmologist. Three weeks later the same patient developed more symptoms of brain-pressure. He was again operated on but this time the surgeons could not find the seat of the abscess, although it was suspected that another abscess had formed which was the cause of the choked disk. The abscess had just been missed, the patient died, and an autopsy disclosed a cistern of pus connected with the former abscess by a canal no larger than the size of a goose-quill—the whole constituting a so-called hour-glass abscess.

This case certainly leads to the conclusion that the accumulation of pus back of the first abscess was the actual cause of the choking of the disk, which had been only incipient when the small abscess was present, and it gives support to the mechanical theory of the causation of choked disk. I believe that it is only by clinical experiences of this kind, by experiments as performed by Harvey Cushing and others, and by observations of cases before and after decompression, that we can come to anything like a satisfactory solution of the question of the nature of so-called choked disk.

DR. J. BORDLEY, JR., Baltimore: For several years I have been associated with Dr. Cushing in working at the practical utility of cerebral decompression. So far as the operative result is concerned, it matters little what the pathogenesis of choked disk is; whether it is a simple mechanical pressure which directly forces down the fluid into the optic nerve, or whether it is pressure which results in the production of a toxin. The important fact to determine is whether a decompressive operation relieves choked disk. We know from an experience covering about 200 brain tumors that it does. When the operation was performed without delay, the results were uniformly satisfactory and convincing. The time to operate in these cases is as soon as they are discovered. There is no change in the optic disk with which I am familiar, from the active stage of hyperemia with edema to the later stages of atrophy, in which a decompressive operation is not advisable.

Professor Saenger records a case of a patient who prior to operation was blind but subsequently had complete restoration of vision. It has been my pleasure to see several such cases. We know, of course, that in these cases there was not complete atrophy, and we believe the blindness due to central pressure and not to pressure on the nerve alone.

It is impossible to look at a disk that is choked and determine its exact condition and what may be expected to result from operation. A marked choking with complete atrophy may be unperceived by the observer; or there may be new tissue formation on the disk and in the nerve which so closely simulates complete atrophy that almost

any ophthalmologist would be willing to stake his reputation on the diagnosis; nevertheless, when the disk declines and the patient recovers there is perfect vision. I am confident that it is not possible to locate the tumor by a study of the disks. While there are suggestive signs they are by no means of positive value. As an example we had a long list, possibly twenty-five or thirty patients, with the greatest choking on the side of the tumor. We were almost persuaded. Then came a series of several cases with the greatest choking on the opposite side. As a rule, however, the greatest choking—or rather the greatest change in the optic nerve—is on the side of the tumor, probably 65 or 75 per cent.

Tumors of the cerebellum, as a rule, give rise to a greater swelling than tumors farther forward. Anatomic variations in the optic nerves make a difference in the degree of swelling on the two sides. Consequently it must be expected that tumors, even of the same histologic structure, will result in a difference in degrees of swelling in different individuals. In our experimental work on animals, where the choked disk was produced with simple saline solutions, the greatest choking usually occurred on the contralateral side. My impression is that the same rule will hold good in patients with intracranial injuries in whom there is hemorrhage. Wherever there was solid pressure, such as produced by paraffin, the greatest change was usually on the same side.

One thing is absolutely certain: a decompressive operation should always be performed when one is dealing with a stationary or increasing choking of the optic disk. There is no excuse for sitting by and waiting for vision to decline; every bit lost may be gone forever, for one may have waited for the beginning of a very rapid end. And it is well to remember that if the sight is not obliterated by pressure, it may be by the new connective tissue which forms in the nerve and in the disk—as the result of long irritation. Like other scar tissue this will shrink, and as it shrinks it snuffs out the life of the nerve.

DR. A. SAENGER, Hamburg, Germany: I am much gratified that my paper has elicited such a lively discussion, and, above all, that Dr. Parsons, the eminent ophthalmologist of London, agrees with me. He declares that choked disk is not an inflammation but an edema of the optic papilla. This statement is very important as coming from a very competent authority on pathologic anatomy in the field of ophthalmology, and also as coming from the English school. We all know how tenaciously the conception of the inflammatory nature of choked disk has been maintained in England. Even Gowers, that well-known authority, has championed this view.

I hope that now there will be a general acceptance of the view that the increased pressure on the brain is the main factor in the origin of choked disk, manifesting itself in the edema of the papilla. There may be inflammatory changes besides, but they are of secondary nature. The inflammatory theory of choked disk, as Leber and Deutschmann propounded it, can no longer be maintained. I am familiar with Dr. Bordley's work on the subject, done in collaboration with Cushing. I visited the famous Johns Hopkins Hospital at Baltimore a few days ago and was amazed at the extraordinary amount of material in the field of brain surgery which is at Harvey Cushing's disposal there. I had also an opportunity to see this master in his special field of science operate. I admired the originality of his technic, the position he gives the patient and his extreme caution and conscientiousness in the execution of the operation. We stand on the same ground in respect to early trephining with a tumor in the brain. Cushing, however, goes beyond me in this. He trephines even before actual choked disk has developed, while I prefer to wait until with existing choked disk the vision begins to show impairment.

My warning to refrain from operating too early is based on my last series of five cases, on the latest experiences with pseudotumors, swelling of the brain, chronic meningitis and brain syphilis with negative Wassermann reaction. The deceptive cases of brain syphilis, which so often runs a disguised course, should be constantly borne in mind, and specific "mixed" treatment should invariably be given a trial before any operation on the brain. I have occasionally encountered unilateral choked disk, far more frequently on the side corresponding to the tumor, but still, though rarely, sometimes on the opposite side. I am persuaded that individual changes in the optic foramen are responsible for the lack of development of choked disk. In one case I was able to determine this to be the fact, although it is technically a difficult matter to demonstrate beyond cavil this narrowing of the optic foramen. It is to be hoped that some research worker may turn his attention especially to this question ere long.

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# DISLOCATION OF SHOULDER-JOINT COMPLICATED BY FRACTURE

## WITH REPORT OF TWO CASES

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The fracture of a dislocated humerus is so rare an accident that up to 1894 a most careful search had revealed only 117 cases, and the surgeon reporting this fact adds that no single observer has met more than five.[1]

The text-books[2] take this subject up in a very limited manner.

This injury is usually caused by the patient having received a heavy blow upon the shoulder, or having fallen on the shoulder or on the outstretched hand or elbow. Rare as these accidents are, a recent authority[3] (1906) says that they are more frequent and more important than fracture of the scapula, though the latter, as well as fracture of the clavicle, also occurs.

In treating dislocation complicated by fracture the dislocation should be reduced as soon as possible by one of several methods in use, the one generally employed being that described by Kocher in 1870, and is described by Keen as follows:

"The patient is seated, and the surgeon stands facing him and on his injured side. He bends the elbow and grasps it in one hand, while he seizes the wrist with the other. He then bends the elbow, and adducts the arm until the elbow touches the trunk. The arm is immediately rotated outward as far as it will go, and being thus adducted and rotated outward the elbow is carried well forward and upward. The whole arm is then rotated inward, so that the hand sweeps over the chest, while the elbow is brought back to its original level. The bone slips into place with a hardly perceptible click in a successful case, and the shape and movement of the joint are at once

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* Read before the Association of Atlantic Coast Line Railway Surgeons, May 17, 1910.

1. Since the article written by Dr. Charles McBurney and Dr. Charles N. Down (Ann. Surg., April, 1894), there have been several contributions on the subject, the principal ones being as follows:
Andrews, E. W.: Surg., Gynec. and Obst., November, 1905.
Royster, H. A.: The Management of Dislocation of the Shoulder-joint Complicated by Fracture of the Neck of the Humerus. The Journal A. M. A., Aug. 10, 1907, p. 487.
Mason, J. M.: Ann. Surg., 1908, xlvii, 672.
Flint, C. P.: Am. Jour. Surg., 1908, xxii, 161.
Spencer, W. G.: Proc. Roy. Med. Soc., London, 1908-9, ii, Clin. Sect., p. 226.
Toubery: Rev. internat. de méd. et de chir., 1908, xiv, 183.
The most valuable contribution during the year 1906, however, was the article written by Dr. Robert Jones on Certain Injuries Associated with Displacement of the Head of the Humerus, Brit. Med. Jour., June 16, 1906, p. 1385.

2. Burghard, Frederick F.: System of Operative Surgery, London, 1909, 575-581.
Eisendrath, Daniel: Dislocations, pp. 395-406.
Keen: Surgery, Philadelphia, 1907; Fractures, pp. 162-181.
Power, D'Arcy: Green's Encyclopedia and Dictionary of Medicine and Surgery, Chicago, 1908, iii, 351; ix, 143.
Rixford, Emmet: American Practice of Surgery, New York, 1908, iv, 31-50.
Stimson, Louis A.: Treatise on Fractures and Dislocations, New York, 1905.
Scudder, C. L.: The Treatment of Fractures, Philadelphia, 1907, 594.
Spencer, W. G., and Gask, G. E.: The Practice of Surgery, London, 1910, pp. 338-340; p. 368.

3. Jones, Robert: Brit. Med. Jour., June 16, 1906, p. 1368.

restored." All this must be done slowly and gently to avoid causing a fracture at the surgical neck. "The Kocher method is based on the exact knowledge of the pathologic conditions, and is the most perfect one for this reason."

The traction method is employed when it is impossible to reduce the dislocation by the above means. There are several ways of applying this, a simple one being to grasp the arm above the elbow and make a steady traction downward and outward, then gradually abduct the arm until it is nearly at right angles with the body. Pressure is then made over the head in the axilla.

Another method is that of Stimson, in which weights are attached to the elbow or wrist (the arm hanging free of the floor as the patient lies upon a table). Ten pounds are added at times one or two minutes apart until 40 pounds have been reached, and in from five to fifteen minutes the head is advanced toward the glenoid cavity by adducting the arm against the fist that has been placed in the axilla.

In fractured dislocations an anesthetic should be administered and "every method should be tried in order to reduce the head before performing operation." Where other efforts fail McBurney's operation is advised, in which an incision is made in the soft parts on the outer aspect of the upper fragment, extending down to the bone, and a hole is drilled in the latter, through which a stout hook is inserted and direct traction made on the upper fragment in the proper direction.

Dr. Robert Jones reports twenty-two cases of fracture of the head of the humerus associated with dislocation of the shoulder, and after advising the reduction of the dislocation as soon as possible by one of the accepted methods, he adds: "Having reduced the dislocation, the fracture of the humerus is of comparatively little moment and need not be dwelt on." Perfect apposition is not necessary to good results, and he strongly advises against the wiring of fragments in fracture through the surgical neck, his experience with many hundreds of cases of this fracture showing that wiring would not have been of service in a single instance. In order to prevent stiffness of movement after the parts have united, massage and passive movements should be regularly practiced between the fourth and eighth weeks.

For fracture of the clavicle and scapula with displacement the dislocation should be reduced and for the latter cases the arm need only be kept at rest and protected from accidental injuries by the use of a shoulder cap, the use of the axillary pad also being considered useless and even dangerous by some surgical authorities. When the clavicle is fractured Sayre's method of strapping the arm is advised.

CASE 1.—*History.*—The patient came into my office Sept. 30, 1909, saying that on July 18 he had fallen out of a wagon and struck on his right shoulder. He could not move his arm; pain was severe, but he got up and went to a physician, who said that he had a dislocation. This physician tried to reduce it without an anesthetic, but could not, so sent him to another physician in an adjoining town, who, on July 20, gave the patient an anesthetic. When he woke up he was told that his arm had been put back in place and that if he would keep it in there for three weeks it would be all right. He removed the bandage at the end of the three weeks and found his arm in the same position it was before. His arm had been paining him ever since and he could not use it only to a limited extent.

*Examinations, Treatment and Result.*—The first examination showed shortening of the humerus, very small amount of adduction and abduction, anterior and posterior motions being limited, and on examination with the *x*-ray made a probable diagnosis of fracture dislocation. I sent him to the hospital, gave him an anesthetic, and on manipulation found a fracture at the surgical neck of the humerus and anterior dislocation. I was unable to reduce his dislocation, so put the arm up in as good position as possible, and when the patient had recovered from the anesthetic advised him to let me operate and put his arm in proper position. This he refused to do and went home. I examined the patient on May 1. He said that he had no pain, but he could not move his arm very much, although his movements were greater than when he left here. He had no adduction and very little abduction, anterior and posterior movements were good. He still declines operation, because, as he says, "My arm doesn't hurt me and I am getting better all the time."

CASE 2.—*History.*—The patient, who was referred to me by Dr. H. on February 18, said that the last he remembered was that he was standing at a lunch-counter drinking coffee: a policeman told him he fell over and had a fit and that they picked him up and walked him home. This was on Nov. 2, 1909. A physician was sent for on November 3, who anesthetized the patient and put his arm in splints. Not having obtained any use of his arm, the patient went back to the physician on December 3, and was again given an anesthetic and the dislocation supposedly reduced again. This time the arm was put up in plaster of Paris; the splint was left for three weeks and then taken off. The arm was still severely painful and useless.

*Examination, Treatment and Result.*—On careful examination, including the use of the *x*-ray, I found a retroglenoid dislocation with fracture of the anatomic neck of the humerus. I advised operation and on Feb. 22, assisted by Dr. Edwards, I opened the joint, using the anterior incision, took out the head of the bone, curetted the glenoid cavity and put the arm up in position, kept it immobilized until the wound healed, and since then the patient has had constantly passive and active motion with massage and as a result is getting good use of his arm. I believe that if I had used the posterior incision I would have had less difficulty in removing the head of the humerus.

In comparing my two cases I find that the patient on whom I operated has the most serviceable arm and therefore, I should advise all persons who have dislocation of the humerus with fracture in which reduction has not been obtained and there is restricted motion to submit to an operation.

All patients with unreduced retroglenoid fracture dislocation should be operated on, using posterior intermuscular incision recommended by Dr. W. G. Spencer.

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## THE CONTRIBUTION OF EXPERIMENTAL TO HUMAN POLIOMYELITIS *

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Epidemic poliomyelitis has within three years become a common and widely distributed disease in the United States. Prior to 1907 the epidemic disease occurred rarely, only, in this country. Since 1907 it has prevailed from the Atlantic to the Pacific Ocean, and probably few states have entirely escaped its ravages. Judging from the fragmentary reports which have come to my attention it would seem as though the southern states had escaped wholly or in large part, but this apparent discrepancy may result from failure either to recognize the nature of the epidemic disease or to report on it, or may be due simply to the circumstance that the fact of its occurrence in the South has not chanced to come to my attention.

*A rather complete bibliography accompanied this article and is included in the author's reprints. Because of the space required, it is omitted from THE JOURNAL.

It is significant in respect to this point that within the period mentioned epidemic poliomyelitis has prevailed in Cuba. Before 1907 epidemic poliomyelitis had been becoming more frequent in northern Europe, and particularly, so far as reports indicate, in Scandinavia. Beginning in 1907 or thereabout a pandemic of the disease arose. The United States, Austria, Germany and latterly France have certainly participated in the epidemic outbreaks. Whether still other countries have been similarly visited I cannot say, but it is highly probable that they have.

It is a matter of significance that the original foci of the epidemic disease in the United States, occurring in the summer of 1907, were among the Atlantic seaboard, and that the two centers of population most seriously affected were about Greater New York and Boston. The particular point of importance in this regard arises from the fact that those two centers of population receive first and in most concentrated way the immigrant population from northern and eastern Europe. Since, moreover, the best established endemic focus of epidemic poliomyelitis recorded in the last decade or two has been the countries of Scandinavia, the further fact becomes significant that the second large isolated outbreak of the disease in this country occurred in that part of the middle west, namely about Minnesota, which receives a large influx of immigrant population from Norway and Sweden.

### CONTAGIOUSNESS

The studies especially devoted to the question of the mode of spread of poliomyelitis, which have been conducted with unusual energy and perspicacity in the last few years, would seem to have rendered contagion highly probable. If the views respecting the manner of the transfer of the contagion put forward with good reason should become established, the explanation of the extension of the epidemic centers of poliomyelitis from northern Europe to America will have become obvious. The data collected in Scandinavia indicate that the contagion can be carried by intermediate persons from the stricken to the healthy, and from patients not frankly paralyzed, but suffering with slight or so-called abortive attacks of the disease. Moreover, the incubation period of the disease would appear to vary within considerable limits, being sometimes not more than two or three or four days in length and at other times as much as twenty days, the average being eight or ten days, and thus affording opportunity for the transportation across the Atlantic Ocean of the incipiently infected. This particular problem would receive considerable illumination from facts which are ascertainable, such as the number approximately of recently arrived immigrants who developed poliomyelitis in this country since 1907. I am not aware that any effort has been made in the course of the several recent extensive investigations of the epidemiology of the affection to elucidate this important point.

The idea of a contagion in respect to epidemic poliomyelitis is not a new one, but appeared in the literature more than a quarter of a century ago, and of late has been frequently invoked. The clinical course of the disease indicated an infectious origin, but up to very recent times no convincing knowledge concerning the nature of the agent causing epidemic poliomyelitis existed. Various bacteria, and especially certain cocci, have from time to time been isolated in cultures from fluids obtained by lumbar puncture from patients suffering from the epidemic disease, or from specimens of the central nervous system removed from victims at autopsy. These bacteria did not conform to one species or group of micro-organisms, and did not suffice to set up poliomyelitis in animals. They can be accounted for more satisfactorily as contaminations or secondarily invading bacteria than as the cause of the disease. The epidemic of 1909 in this country, in France and in Germany, led to a renewed study of the nature of the infection, in the course of which the more subtle and recent methods of bacteriology were employed. These methods led almost simultaneously in the United States by Dr. Lewis and myself and in France by Landsteiner and Levaditi, to the discovery that the infectious agent was an extremely minute micro-organism that readily passed through the pores of earthenware filters and constituted, therefore, an example of the so-called filterable viruses, of which at the present time several examples are known to cause infectious diseases in man and the lower animals. The filterable nature of the virus has now been confirmed wherever the subject has been accurately investigated. On acquisition of the fact of the nature of this virus, and of the further fact, on which the discovery of the nature of the virus actually depends, that both the higher and lower monkeys are subject to the experimental disease, rests the recent great advances which have been made in the investigation of epidemic poliomyelitis.

### EXPERIMENTS WITH MONKEYS

It was predictable that the effort would be made as soon as circumstances favored to transmit poliomyelitis to monkeys. Since the disease appeared not to be transferable to the more common species of warm-blooded animals, usually available in laboratories, it became imperative to attempt its transfer to other species more nearly related to man. The last few years had indeed afforded several brilliant instances in which progress in determining the nature or the conquest of important infectious diseases had resulted from the use of apes and monkeys. Two examples illustrative of this statement are afforded by syphilis and epidemic cerebrospinal meningitis. Hence, in 1907, when the first epidemic appeared in New York and vicinity, we endeavored to transfer poliomyelitis from human beings to monkeys. Unfortunately we were at this time limited merely to fluids obtained by lumbar puncture from cases at different stages of the disease. I say unfortunately for the reason that we had the idea originally of bringing the supposedly infected material directly into relation with the nervous systems of monkeys. This we indeed did with the fluids obtained by lumbar puncture, from which we failed entirely to produce any symptoms that we could discover, including paralysis. During the epidemic of 1907 we did not secure organs from a case of pure infantile paralysis, and we failed, therefore, in our intention to inoculate monkeys from the spinal cord. Had we secured such material the discovery of the nature of epidemic poliomyelitis would, it is fair to assume, have been made two years earlier than it was. It was not until September, 1909, that we secured the spinal cord from two cases of infantile paralysis in human beings, which specimens were employed for the inoculation of monkeys by direct injection of an emulsion into the brain through a trephine opening. The first inoculations were successful. The animals immediately after their recovery from the ether anesthesia were lively and normal. They remained apparently in perfect health for a number of days, when paralysis set in. The spinal

cord derived from these animals was and is still being employed to transmit the infection to still other monkeys.

During the summer of 1909 Landsteiner and Popper published an account of a successful inoculation of two monkeys with the spinal cord derived from a case of infantile paralysis in a child. They employed the peritoneal cavity as the site of injection, which led to the development of paralysis, but in endeavoring to continue the transfer of the virus by intraperitoneal injection of other monkeys they failed entirely. Strauss and Huntoon in this country, who repeated in the late summer or early autumn of 1909 the experiments of Landsteiner and Popper, met with the same interruption of their work. Using the peritoneum as the avenue of entrance of the virus, they succeeded in producing paralysis in a monkey inoculated with the human cord, but failed to produce paralysis when they transferred to other monkeys a suspension of the spinal cord of the paralyzed monkey. In view of these experiments, and of still other similar ones made by different investigators, it is probable that the virus contained within the human cord is on the whole more active when implanted in the monkey than is the virus contained within the monkeys' spinal cords that is derived by proliferation immediately from the virus of human source. The question for the moment remains open whether this disparity depends on the quality of the virus or the number or state of concentration of the organisms. Later studies, to which reference will be made, indicate that the virus of poliomyelitis is subject to qualitative variations, from which it follows that the sudden change of host might tend to a reduction in the potency of the virus, the fact of which reduction is exhibited when the virus is compelled to traverse a considerable territory and to overcome certain natural obstacles before it reaches the central nervous system, on which it became implanted. The fact of this qualitative change is far less apparent when the altered virus is brought immediately into relation with the tissues of the nervous system.

### CLINICAL EFFECTS OF INOCULATIONS

In noting the clinical effects of the inoculations we have paid attention to a number of conditions and signs that had already been indicated by observations made on the human affection. We have, therefore, observed an incubation period represented by the interval elapsing between the time of inoculation and the appearance of the first definite paralysis, which incubation period includes certain manifestations which have been noted as prodromal symptoms. Thus the shortest period noted as elapsing between the inoculation and the onset of paralysis has been three or four days and the longest period thirty-three days, the average period being eight or nine days. The prodromal symptoms consist of a state of undue nervousness and excitability on the part of the inoculated monkeys, or inability to fix the gaze, with which is associated a wrinkle and mobile rather than smooth and placid cast of countenance, and an erection of the hairs over the body. These symptoms are most marked for a period of from six to eight hours before the onset of the paralysis. We have not noted any constant elevation of temperature or gastro-intestinal disturbance. The onset of paralysis either when the prodromal symptoms have occurred, or when they have been absent or undetected, tends to be sudden. The paralysis affecting any of the larger groups of voluntary muscles tends to be accompanied with other weak or partially paralyzed groups of muscles. In certain animals the medulla was first affected, and in them death sometimes occurred before the development of actual paralysis. In respect to location, the lower and upper extremities were affected oftener than the muscles of the trunk, and the spinal paralyses were much more frequent than the cerebral. Sensory disturbances occurred, but their investigation was much less satisfactory than the investigation of the motor disturbances. In other words, there is a striking similarity between the frank examples of epidemic poliomyelitis, whether occurring spontaneously in man or produced experimentally in monkeys. A further correspondence exists in this: Slight and evanescent or abortive attacks of the disease have been described in human beings, cases the nature of which would not be suspected were it not for the fact that they occur during the prevalence of epidemics of frank paralysis; and similar abortive or evanescent attacks have been noted among inoculated monkeys, but rarely. There is, however, one important point in which the experimental disease happily differs from the human affection. The mortality in the human affection rarely exceeds 10 per cent. of those frankly attacked, and frequently it is much less than that. The experimental disease, on the other hand, has terminated fatally in about one-half of the first series of animals inoculated, and in a much larger proportion of the later ones. Hence the experimental disease is more highly fatal than the spontaneous disease.

### PATHOLOGY

A still further correspondence between the spontaneous and experimental disease is found in respect to the pathologic changes or lesions. The gross lesions visible to the naked eye present in the spinal cord and medulla of monkeys consist of congestion and hemorrhage into the gray matter, chiefly but not exclusively confined to the anterior horns. On the other hand, the general appearance of the spinal cord, medulla and brain are not greatly altered, and the visible effects are no proper measure of the damage inflicted by the virus.

The microscopic lesions are more severe and widespread in the spinal cord than in the brain, and more pronounced in the gray matter and membranes of the cord than in the white matter. No part of the spinal cord, including the medulla, is entirely free from lesions, but the severest lesions tend to occur at levels corresponding to the groups of muscles most severely paralyzed. The meninges show more or less diffuse infiltration with round cells, the greatest accumulations of which are about the blood-vessels, where thick collars of cells often exist. The infiltration is within the adventitial coat, while the muscular coat and the intima remain intact, although the lumina of the vessels are often encroached on through compression. When the vessels are small the effect on the lumina, and hence on the permeability, are considerable. Meningeal cellular invasion is always interstitial and does not give rise to exudate on the surface of the cord or brain, and it is, moreover, made up almost exclusively of mononuclear cells.

The gray matter of the cord shows lesions of the anterior and posterior horns and the commissure, but the anterior horns are as a rule more severely and widely injured than the posterior horns. The chief lesions surround the vessels and consist of a cellular infiltration

and edema of the perivascular spaces, and sometimes of hemorrhages as well. When the nerve cells and ground substance are injured, as is frequently the case, foci of similar cells occur there, and the nerve cells show degeneration and necrosis. The extent of the lesions in the gray matter varies greatly. Sometimes minute foci of injury and sometimes complete degeneration of the anterior horns occur. The infiltration of the perivascular sheaths of the vessels is continuous with that of the pia-arachnoid. The white matter of the cord holds in respect to the frequency and severity of the affection an inferior position, and the lesions when present there consist of edema, perivascular cellular infiltration, hemorrhage and necrosis of tissue. The brain shows lesions that are, however, more sparse than in the spinal cord. They correspond with cellular infiltrations of the meninges similar to but less in amount than in the cord. The intervertebral ganglia regularly are the seat of a diffuse and nodular infiltration with lymphocytic cells, which collect between the nerve cells and about the nerve fibers, both of which may be the seat of degeneration or of necrosis.

The pathogenesis of the affection is explained by the nature and distribution of the lesions. It would appear that the virus becomes implanted on the leptomeninges, especially in the region of the spinal cord and medulla, where it sets up cellular infiltrative changes that are most marked in the perivascular lymph spaces of the arteries entering the nervous tissues. The vascular lesions constitute the primary causes of the lesions of the nervous tissue, the severity of which is determined by the particular vessels affected and the intensity of the involvement. The infiltrative lesions are confined to the perivascular lymph sheath and adventitia, but still other lesions must occur in the intima of the vessels from which the edema and hemorrhage arise. The central arteries entering the anterior median fissure and supplying the anterior gray matter of the cord invariably become affected, through which the preponderance of lesions of the anterior horns is accounted for. Since the arteries supplying the posterior gray matter are less important, the lesions in the posterior cornua are slighter. The degree, therefore, of affection is determined by the richness of the arterial blood supply, whence is explained the liability of the lumbar and cervical enlargements to severe lesions. Irregularity in the branching of the central artery probably explains the common variations observed in the involvement of the two lateral halves of the body. The brain is far less commonly the seat of lesions, but it is not spared. Paralysis of the cranial nerves, and especially of the facial nerve, follows on them, but lesions also occur in parts of the brain which do not respond by paralysis. The brain injuries, like those of the cord, depend on vascular lesions.

Hence it would appear that there are good grounds for believing that a considerable part of the paralyses, especially those that are not permanent, are the effects of temporary vascular impediments. The impediments are all outside the lumina of the vessels, which are merely reduced in caliber through pressure. Thrombi do not occur. Some of the functional disturbances are possibly thus anemic in origin; others are probably caused by slight degenerations, and still others are undoubtedly caused by focal hemorrhages and edema. All these effects may possibly be recovered from: part by resolution of the cellular vascular infiltrate and reestablishment of the lumen; part by absorption of edema and hemorrhage, and part by restoration of the mildly degenerated nerve cells. The severer degenerative and other lesions, through which actual necrosis is produced, do not become restored. On them depend the permanent paralyses and deformity.

### THE VIRUS

The virus causing epidemic poliomyelitis has been stated to be of very minute size. It is, so far as we can now judge, one of the most minute organisms known to cause disease. This conclusion follows from the fact that in aqueous suspension, such as is secured through preparing an emulsion of the spinal cord in distilled water, it passes with great readiness and little or no loss of potency through the pores of the densest and finest porcelain filters, namely, the so-called Chamberland filter. It passes with even greater ease through the somewhat less dense Berkefeld filter. It is extremely doubtful whether the virus has actually been seen. On staining film preparations of the filtrate with mordanting dyes, preparations are secured which under the highest powers of the microscope exhibit minute points, circular or slightly oval in form, which possibly, although not certainly, represent the stained parasite. When the filtrates are examined under the dark microscope, innumerable bright dancing points, devoid of definite size and form, and not truly motile, can be discerned. That these particles represent the micro-organism of poliomyelitis cannot be affirmed, since similar particles are present in filtrates obtained from nervous and other tissues which can be viewed also as consisting of simple protein matter.

The filtrates are highly potent. Quantities as small as one one-thousandth to one one-hundredth of a cubic centimeter suffice to cause paralysis in monkeys after the usual incubation period, when injected into the brain. The virus is highly resistant to external agencies and conditions. It withstands glycerination for weeks or months very much as the virus of vaccinia or rabies does. It withstands drying over caustic potash for weeks without any or marked reduction in potency, showing a greater degree of resistance than the virus of rabies. It retains its virulence apparently unimpaired for weeks, on being kept constantly frozen at minus 2 to 4 C. It also withstands for a long time temperature slightly above the freezing point of water, in the course of which the nervous tissue containing the virus undergoes autolysis, and it has been shown to survive the growth of ordinary mould. On the other hand, it is readily injured by heating, since temperature of 45 to 50 C. maintained for half an hour suffices to render the filtrate incapable of causing paralysis. It is also readily destroyed by 1 per cent. solution of hydrogen peroxid, and by such simple disinfectants as menthol.

That the virus is a living organism must be concluded from the fact that such minute quantities of it suffice to carry infection through an indefinite series of animals. We have propagated the virus now through twenty-five generations, representing twenty-five separate series of monkeys, and as many removes from the original human material supplying it, and the activity of the virus for the monkeys has increased rather than diminished in the course, and as the result of the successive transplantations. Whether the virus has been or is to be cultivated outside of the body is still an undecided question. We early secured certain indications which led us to hope that the virus multiplied in a medium of bouillon mixed with human serum. We have, however, not succeeded

in producing paralysis by the inoculation of one of these possible cultivations. On the other hand, original virus has been observed to retain its virulence for several weeks when kept in a similar bouillon at the temperature of the thermostat.

### PROGNOSIS

At the outset of the experiments we estimated that less than one-half of the monkeys that became paralyzed would, if permitted, recover more or less completely from the paralysis. Since, however, our purpose was best served at the time by sacrificing the paralyzed animals immediately on the appearance of the paralysis, they were as a rule etherized. We now believe that the deduction was erroneous and that the fatalities would have been greater than we supposed, and probably as many as three-fourths of the paralyzed animals would have succumbed to the disease. At this early period, however, a number of paralyzed animals recovered, usually, however, incompletely, retaining residue of the paralysis similar to what is observed in the spontaneous human affection. The indications now are that the virus has altered qualitatively and so increased in potency in the later generations that recoveries are hardly to be looked for. The mortality at present approaches 100 per cent., with which figure there is happily nothing in the pathology of the human affection that is comparable. In view of certain experiments of a therapeutic character which are to be mentioned, the fact of the intense activity of the virus should be borne in mind. Undoubtedly examples of the virus will be discovered which will become modified in the reverse direction and lose rather than gain in activity. At one period, indeed, in the course of propagation of each of the two viruses which we originally secured there occurred what appeared to be a sharp decrease of virulence, a change indicated by feeble effects during several passages and the final loss of power of certain strains to transmit the infection. To the circumstance that we carried the virus forward in parallel series of inoculations is to be attributed the survival and increasing activity of the strains at present in use.

### INOCULATION OF OTHER ANIMALS

Repeated attempts have been made to implant the virus on other animals, but without success.[1] The animals thus employed consisted of the available warm-blooded domestic animals of this country, and included guinea-pigs, rabbits, rats, mice, dogs, cats, sheep, cows; goats, pigs, chickens, pigeons and horse. The rabbits and guinea-pigs were inoculated directly with each of the two specimens of human virus, and additional rabbits and guinea-pigs and other animals with virus derived from monkeys. In contrast with these failures is the successful employment of several species of monkeys. The greater number employed were of the species *Macacus rhesus*, but all other species of old world monkeys seem equally susceptible. These included, beside *M. rhesus*, *M. Cyonomolgus* and *nemestrinus*, *Cercocebus fulignosus*, *Cercopithecus callitrichus*, and *Papio babuin*. Of the new world monkeys we employed two species, one belonging to the genus *Cebus* and the other including *Capuchinus*. It chanced that the larger ring-tail proved susceptible and the smaller did not, so that a question arises whether the catarrhine are not more uniformly susceptible than the platarrhine species. No instance of the spontaneous transfer of the virus from a paralyzed to a normal monkey arose, although many opportunities for contagion in the course of our many experiments occurred. This fact does not militate against the notion of contagion in respect to the spontaneous disease in man, for the reason that the monkey is obviously under ordinary conditions and because of the possession of adequate external means of defence an insusceptible species, although once these defences are surmounted it proves less able to resist the injurious effects of the virus than human beings.

1. Krause and Meinicke, in Germany, of all those engaged in the recent investigations, alone claim to have transferred the disease to rabbits.

### MODES OF INFECTION

We have seen that the intracerebral mode of infection is not the only successful one, and that the virus may be introduced into the body by way of the peritoneal cavity, under circumstances leading to paralysis. It has been proved that the virus, when derived from an infected monkey, may also be introduced successfully by way, not only of the peritoneum, but also by means of the general blood, the subcutis, spinal canal, large nerves and certain mucous surfaces. Thus the introduction of large quantities of virus into the stomach or duodenum does not lead to paralysis unless the motions of these organs are for a time arrested by means of opium. When peristalsis has thus been prevented infection and paralysis result in some instances after this mode of introduction of the virus. However, it would appear that none of the avenues mentioned lead so uniformly to paralysis as does the direct or intracerebral mode of inoculation into the nervous tissues. There exists, however, one mucous surface that is more readily traversed by the virus than the other avenues, excepting the brain, and that is the mucosa of the nasopharynx. If this mucous membrane is lightly scarified in an etherized animal, and the virus rubbed into the scarifications by means of a swab, infection and paralysis usually, and with few exceptions, results with promptitude. Our experience is to the effect that the tracheal mucosa and the lungs do not afford an easy point of entrance of the virus into the body, at least under conditions in which gross lesions of the superficial tissues have not been previously produced.

The facts just given concerning the several possible portals of entry of the virus of poliomyelitis into the body under conditions leading to paralysis have significance with respect to the usual portal of entry of the poison in the spontaneous infection in man. We have been led by certain theoretical considerations to view the nasopharynx as the location in the body to be regarded with special suspicion as being the portal of entry of the virus. Some of these theoretical considerations may be mentioned. Our attention was arrested by the frequently observed fact that in point of distribution epidemic poliomyelitis resembles epidemic cerebrospinal meningitis, and that the two diseases, indeed, so often presented such close similarities in this respect that they had often been confounded with each other. The chief and striking difference between them related to the seasonal prevalence, which for epidemic poliomyelitis is midsummer and for epidemic cerebrospinal meningitis late winter or early spring. The two diseases, moreover, attack by preference infants and young children, although not sparing older children and adults, and in about the same ratio. In the majority of instances a single case appears in a family or home, but often two cases, and less often three or more cases appear. The relation between the group cases in a house or locality has in respect to both

diseases been made out only recently, through the discovery of the rôle of the intermediate carrier of the infection.

Now it is held that the *Diplococcus intracellularis* passes into the cerebrospinal membrane by way of the lymphatic connection existing between them and the nasopharyngeal mucous membrane. None of the lower animals, not even monkeys, are so susceptible to the pathogenic effects of the *Diplococcus intracellularis* that its inoculation into the nasal mucosa suffices to set up acute meningitis. We have already seen that the virus of poliomyelitis, which is so much more active, can be introduced successfully by direct inoculation into this membrane.

The considerations thus far given show the close agreement existing between the two diseases, epidemic meningitis and epidemic poliomyelitis, in respect to the part played by the nasopharyngeal mucous membrane. Still other considerations are these: It is difficult, if not impossible, to establish in human beings the fact that the diplococcus passes from the meninges by a reverse lymph current into the nasopharynx, and yet such a migration is not only highly probable, but would most readily and satisfactorily explain the persistent intracellularis infection of these mucous membranes, which is regularly present in epidemic cerebrospinal meningitis. The case is quite different in monkeys infected with *Diplococcus intracellularis* by injection of cultures into the lumbar spinal canal, in which the migration into the nasopharynx of the diplococcus contained in leukocytes, and free also, has been followed with the microscope. It may therefore be regarded as established that this mucous membrane serves both as the site of escape from and of entrance into the meninges of the *Diplococcus intracellularis* in man. The question arises: Does this membrane serve a similar double function in respect to the virus of poliomyelitis? That it may serve for its entrance into the body we have already seen, and the experiment is readily made to determine whether or not the virus is also excreted there. The excised mucosa of monkeys recently paralyzed and killed has only to be rubbed up with quartz sand, suspended in distilled water and pressed through a porcelain filter in order to secure a fluid free from bacteria and suitable for inoculation into the brain of healthy monkeys. By employing this method we have been able to produce paralysis, and thus to prove that the mucous membrane contains the virus. The virus in the mucous membrane is not derived from the blood contained within it. It is true that the blood does contain the virus, but in such minimal quantities that an amount of two cubic centimeters may fail to cause the infection, while as much as 20 has caused typical paralysis. Moreover, we have ascertained that the organs generally do not contain the virus in such amounts as readily to convey the infection. We have failed repeatedly to secure infection from the spleen, bone marrow, liver and different groups of lymphatic glands, and in several experiments failed to develop paralysis after injection of the salivary glands, although Levaditi has reported one such successful experiment among several failures. We have failed to produce paralysis by the injection of a suspension of the mesenteric lymph nodes taken from an animal that had become paralyzed as a result of an intrastomachic injection of the virus, while we have been successful in producing paralysis with the mesenteric lymph nodes secured from a human case of poliomyelitis. That the lymphatic glands in the monkey are capable of retaining the virus in an active state is proved by the fact that after subcutaneous inoculation of an emulsion of the spinal cord derived from a paralyzed animal, the regional lymphatic glands (axillary and inguinal) proved infectious. Again, Römer and Leiner and Wiesner have in certain instances caused paralysis by injecting into the brain emulsions of the mesenteric and of the cervical lymphatic glands taken from monkeys which became paralyzed following an intra-cerebral inoculation of the virus. It appears, therefore, that the virus may be retained for a time by certain distant organs, and especially by the lymphatic glands, which it reaches through the general circulation; but these localizations give no indication of the point of entrance into the body of the virus. The virus has thus far not been found in the excreta, that is, in the feces and urine, nor in the intestinal mucosa or bile. Since the virus is filterable it is possible to demonstrate its presence in material highly contaminated with bacteria.

We are disposed to the view that the nasal mucosa serves not only as the portal of infection but also as the path of elimination of the virus into external nature, since such elimination must occur in order that the virus be maintained alive and transmissible. It is well known that direct connections exist between the meninges and the nasal mucosa by way of the lymphatics, which pass with the filaments of the olfactory nerve through the cribriform plate. We have already alluded to the fact that the virus first becomes implanted on the leptomeninges, and this primary location of the virus is what would be especially favored by the mode of entrance of the virus just mentioned. That the early participation of the leptomeninges does not occur without certain definite corresponding alterations taking place in the cerebrospinal fluid we have been able to demonstrate. It will be recalled from the cerebrospinal fluid obtained by lumbar puncture from cases of the human spontaneous disease at different periods after the onset of paralysis, have shown only slight qualitative abnormalities. These fluids, which are clear, but may be in excess, show merely a moderate increase of the lymphocytes normally present, and no other qualitative changes. Moreover, this fluid has been shown by repeated tests to be non-infectious, or at least not capable of setting up paralysis in monkeys, even when injected into the brain. In monkeys on the other hand, in which the spinal fluid can be investigated during the incubation period of the disease, as well as after the development of paralysis, it has been shown that the reaction of the meninges to the injection of the virus occurs quickly and that at the expiration of periods of twenty-four, forty-eight or seventy-two hours, the number of cells within the fluid has progressively increased, so as to give rise to a slight opalescence of the fluid which becomes subject also to spontaneous coagulation. The fluids contain an excess of protein, as may be shown by means of Noguchi's butyric acid test. This condition of increased cells and protein is of brief duration and is succeeded by one in which the fluid is clear and non-coagulable and the protein not increased, but only the lymphocytes are more numerous than normally. This is the state of the fluid in monkeys at a period concurring with the onset of paralysis, or appearing soon after, so that there is essential agreement between the two conditions. The spinal fluid taken from monkeys when clear and limpid, does not convey the infection and produce paralysis, but when

the fluid is taken at an earlier period, at the height of the opalescence, it is capable of transmitting the disease.

Finally, the question arises whether the virus of poliomyelitis can be directly implanted on the leptomeninges, which question can be answered in the affirmative. If an active virus is introduced by lumbar puncture into the meninges, infection and paralysis may be produced. Hence it would appear as though all the theoretical conditions required to establish the nasal and meningeal route as a direct one for infection in poliomyelitis had been supplied by experiment.

It remains to add that in course of the demonstration given by these experiments, two important subsidiary problems have been elucidated: First, the pathogenesis of the affection has been rendered clear and comprehensible, and next the changes in the spinal fluid induced by the infection have been brought clearly into view as constituting criteria on which, even in human cases, an early diagnosis of the disease, preceding the onset of any meningeal or paralytic symptoms, may come to be based. What is required merely is that those physicians having access to clinical cases should perform lumbar puncture early[2] when poliomyelitis is suspected, and during the prevalence of an epidemic on patients presenting a series of indefinite symptoms that precede as prodromata the onset of paralysis, or themselves comprise the group-symptoms that may define the so-called abortive form of the affection.

## IMMUNITY

Experiments have been conducted to determine the kinds and degrees of immunity which are produced by the inoculation of the virus of poliomyelitis. Since the literature on epidemic poliomyelitis is silent on the subject of reinfection, it can be inferred that a second attack of the disease is rarely ever suffered by one individual. Two possible reasons can be assigned for this: The first and most probable is that one attack of this disease, as is the case with some other acute general infections, tends to afford an enduring immunity, and the other, that as epidemics have in the past occurred infrequently and reappeared after long intervals, the children once affected have passed beyond the susceptible age period at the time of the next epidemic.

We have available in monkeys which have recovered from an undoubted infection, attended by paralysis, an opportunity to decide the question whether an attack of poliomyelitis protects against subsequent infection. Thus far we have subjected a number of monkeys to reinoculation into the brain at periods varying from eight days to four or five months, after the paralysis first appeared, without succeeding in reinfecting any of these animals. They were not rendered perceptibly sick by the subsequent inoculation after the one originally producing paralysis, and in no instance was recrudescence of the paralysis produced. It is interesting to note that in point of severity the first attack varied between mere tremor of the head, a partial paralysis of one limb, and complete paralysis of legs and arms. The paralysis had in some instances nearly or completely disappeared, and in others it had become reduced, but still affected all the muscles of one or two limbs. These results indicate what will probably be found to be true equally of human beings, that an undoubted attack of poliomyelitis, even when unaccompanied by definite paralysis, produces a state of refractoriness in reinoculation with active virus that endures for months and probably for years, if not throughout the life of the affected individual. On the other hand, our experiments, embracing now a large number of monkeys, establish that when the virus is introduced into the brain, practically all monkeys belonging to the generally susceptible species are subject to infection, although they do not invariably succumb to the first inoculation, but may require a second injection. However, it would still appear that rare individual monkeys are highly refractory to infection, and it has also been observed that an unsuccessful inoculation of the virus does not act as a protective, but leaves the unaffected animals either with their original degree of susceptibility unimpaired, or, what further experimentation will be needed to confirm, leaves the animals possibly somewhat more disposed to a subsequent infection.

This latter point of the failure of an unsuccessful intracerebral inoculation of the virus to increase resistance does not answer the question negatively, whether by suitable means it may not be possible to develop an active immunity independently of the production of even the most trifling symptoms that might be taken to indicate an attack of poliomyelitis. We have, indeed, been successful in establishing in a certain number of monkeys a state of active immunity through a single large subcutaneous injection of the crude or modified virus, as represented by the emulsions of the spinal cord taken from recently paralyzed monkeys, or by repeated injections of gradually increased amounts of the crude virus. This mode of producing active immunity has not, up to the present, been developed into a uniformly successful and safe method, since of the treated animals some do not develop a strong immunity and others develop paralysis as a result of the treatment. The direct immunizing effect has been produced also by means of a virus somewhat modified after a long immersion in glycerin, so that it may be regarded as probable that a qualitatively modified virus, changed through the action of chemical or physical agents, or modified by biological conditions within certain hosts, can be produced, and that this altered virus will be found more appropriate than the virus of full potency for purposes of active immunization. At present the experimental basis is entirely inadequate to justify the attempt to induce active immunity as a protective measure in human beings. Monkeys thus directly immunized resist successfully the injection of large doses of virus into the brain.

It has therefore been established that an undoubted and even high degree of immunity to infection with the virus of poliomyelitis is obtainable in animals, and probably equally in human beings. The question which next arises is this: As a result of this immunity, do the body fluids acquire new properties capable of experimental demonstration, on which the immunity probably depends? In answer it can be stated that human beings and monkeys who have passed through an attack of poliomyelitis come to contain in their blood certain neutralizing principles for the virus of poliomyelitis, and that these principles are readily demonstrable by animal tests for two or more years in human beings, and that they probably persist for as great a period in monkeys. Similar principles are absent from the normal serum.

2. The earliest cellular reaction in monkeys is not purely lymphocytic but includes polymorphonuclear leukocytes which may predominate for the first period of one or two days. The earliest reaction of the meninges in human beings also is attended with polymorphonuclear excess (Wickman and Fulton.)

They are demonstrated by bringing into contact an active filtrate containing the virus with the serum of the blood derived from animals or human beings who have recovered from poliomyelitis, or from monkeys actively immunized directly to the virus, and incubating the mixture for a period at 37 C. and determining that after this treatment the virus is no longer able to set up paralysis on being injected into the brain of normal monkeys. Furthermore, it has been shown by Netter and Levaditi that the blood of a patient who had suffered an abortive attack of poliomyelitis contained such neutralizing principles.

A pressing question could now be approached, namely, whether the immunity principles contained within the serum suffice to neutralize the virus of poliomyelitis once it is present in the body. It could be assumed that the serum of animals, as of human beings that had recovered from paralysis, would contain the immunity principles in no high state of concentration. Effort was therefore made to reinforce the degree of immunity in these monkeys by subsequent inoculations of virus, and the therapeutic experiments defined were conducted in part with this reinforced serum, and in part with the serum of directly immunized monkeys, and such serum as could be obtained from human patients. It can now be stated that if the quantity of the virus injected into the brain be not in excess of a given dose the development of paralysis can in some cases be prevented by making several injections of the serum by lumbar puncture into the subarachnoid space, while in another number of animals the onset of paralysis is much delayed. In respect to the latter point it may be stated that the period of incubation in the control animals ranged from seven to eleven days, and in some of the animals treated with the human serum the onset of paralysis was delayed until the twenty-sixth or twenty-seventh day. Moreover, infection by the nasal mucosa can also and with greater certainty be prevented by the serum injections.

The manner of making the therapeutic injections was somewhat varied, but in general may be described as follows: An intracerebral injection of the virus having been made, after the expiration of a period not exceeding twenty-four hours, the subarachnoid injections of the serum were performed on three successive days, after which, an interval of three days having been allowed to elapse, three more daily injections of serum were given. We chose the subarachnoid method of injection rather than the intravenous mode, in order that the immunity principles might be brought into the most direct relationship with the virus, and particularly in view of our conception of the pathogenesis of poliomyelitis and of the primary site of localization of the virus in the leptomeninges. We believe that as good results could not be achieved by the intravenous injection of the serum, although the immunity principles could doubtless be brought to the nervous tissues by the circulating blood, for the reason that we know that these principles are not readily if at all secreted into the subarachnoid space. Hence they would not come into relationship with the seat of the active virus at a period preceding its active proliferation and extension throughout the nervous tissues. We think it also probable that had the serum injections been resumed after another interval of rest, the last vestiges of the virus in the tissues might have been destroyed in those animals in which the incubation period was much delayed, so that the ultimate appearance of paralysis might have been entirely prevented.

We have sought to ascertain whether animals protected from infection through the employment of mixtures of virus and immune sera, or as a result of treatment by subarachnoid injections of immune sera for therapeutic purposes, exhibited an unusual degree of resistance to subsequent intracerebral injections of active virus made at periods of several weeks to four or five months after the conclusion of the original experiments. The object of these tests was to ascertain whether a permanent augmentation of the natural resistance to infection had been accomplished by the introduction of the virus under these conditions of restraint into the body. We have found that no unusual degree of resistance to subsequent intracerebral injections of active virus has resulted, which fact we believe points to the validity of the following deductions: (1) A neutralized mixture of virus and immune serum does not lead to any degree of active immunization; (2) the therapeutic action of an immune serum is associated with restraint of multiplication of the virus such as would be required to establish any grade of active immunity; (3) a simple passive immunity is either not produced at all by the serum injections, or is of brief duration or small amount.

### PRODUCTION OF A SERUM

The observations on immunity which have been presented early suggested that an effort be made to produce a corresponding active immunity in some of the lower animals that might possibly become the source of a therapeutic serum. This particular phase of our studies is being actively pursued at the present time. However, several facts have already been developed. It has, for instance, been found that the horse does not readily respond even to large injections of filtrates carrying the active virus with the development of immunity principles within the blood. It is true that our experiments are restricted for the present to a single horse, the blood serum of which, after many months of treatment, had no restraining effect on the virus either *in vitro* or within the body. The rabbit and chicken would seem not to yield such immunity principles. On the other hand we have secured indications that the sheep may react more favorably. It has been found that normal sheep serum possesses a definite although slight neutralizing power for the filtered virus when mixed directly with it, and that the injection of emulsions of the spinal cord and brain of recently paralyzed monkeys into the sheep augments this property of neutralization. What remains to be determined is the degree to which this augmentation can be carried, and whether a serum can be secured that will possess therapeutic value; but should the sheep fail in this respect, the search must be continued and be made to include still other species of animals, in the hope that one will be found in which the immunity response will be greater. There are serious objections to the use of monkeys as a source of a therapeutic serum, even were one of high potency capable of being prepared in those animals. The use of human serum, derived from persons who have passed through an attack of poliomyelitis, as a therapeutic agent, would be free of certain objections attached to the use of monkey serum, but it is not very probable that such an immune serum would be found to have sufficient strength or that it could be procured with sufficient readiness to make it available for practical application. Finally, the serum treatment of poliomyelitis must at the present time be regarded as strictly in the experimental state, and it can-

not be predicted how soon or whether ever at all such a form of specific treatment of the disease will be applicable to the spontaneous epidemic disease in human beings.

SUMMARY

It may be confidently stated that the experimental study of poliomyelitis has yielded a large number of important facts relating to the spontaneous disease in man. These facts include the discovery of the nature of the virus, of many of its properties, of certain important clinical and pathological peculiarities of the disease, of the phenomena of immunity, of a mode of spontaneous infection, while they have served to establish a basis on which to develop measures of prevention, and on which to build hopes for the working out of a specific method of treatment. Moreover, the advance which has now been accomplished will make it possible to determine with accuracy whether poliomyelitis is a single clinical and pathologic entity, or a generic name covering groups of symptoms and descriptive of the effects of certain lesions of the spinal cord and brain of which epidemic poliomyelitis is merely one, but the most important variety. It is not improbable that poliomyelitis, like meningitis, may be found to arise from several independent causes, and that epidemic poliomyelitis, like epidemic meningitis, may be distinguished among the varieties by being invariably the product of a specific micro-organism. We possess already evidence to the effect that certain of the lower animals, among them poultry, the dog, and possibly the horse, are subject to poliomyelitis, due apparently in each instance to a cause peculiar to the species affected.

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## THE ARSENICAL TREATMENT OF SYPHILIS

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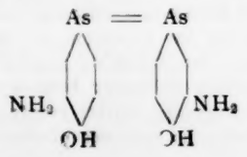
Much attention has recently been paid to the arsenic treatment of syphilis and particularly to the Ehrlich-Hata preparation known as "606", *i. e.*, the dioxydiamidoarsenobenzol dihydrochlorid, a single injection of a proper dose of which is reported to be destructive of the *Spirochæta pallida*. The recently recorded cases show a striking uniformity in the immediate curative effects in all of the spirilloses, or diseases of spirochetic origin.

It is believed that this arsenical preparation is as destructive of the spirochetes as quinin is of the plasmodia of malaria. The spirochetes disappear entirely from the local lesion and from the blood in from four to ten hours after the injection of the remedy and the disease appears to be entirely arrested in twenty-four hours. These seem astonishing statements but they are verified by a number of able observers as Ehrlich, Hata, Wechselmann, Alt of Uchtspring, Schreiber of Magdeburg, Iversen of Russia and others.

The chemical composition of this drug as given by Dr. Bertheim, who manufactures it in the Royal Institute for Experimental Therapeutics at Frankfurt under the directorship of Prof. Ehrlich, is $C_{12}$ $H_{12}$ $O_2$ $N_2$ $As_2$ and is expressed by Ehrlich in the following formula:




This arseno-benzol-dihydrochlorid preparation is a yellowish crystalline substance not unlike iodoform in appearance and must be kept in hermetically sealed vials as the drug becomes very toxic when exposed to the air. For administration it must be handled with the greatest care and exact details in the technic must be carried out.

The dose is a single injection of from 3 to 7 grains, given either intravenously or into the gluteal or pectoral muscles.

It is not yet available to the profession for general use. In a letter which I received a few days ago from Dr. C. H. McKenna of Chicago, who was kind enough to go from Paris to Frankfurt at my request, he states that he was received and treated by Prof. Ehrlich with the greatest courtesy and all the matters concerning this preparation, the treatment and results, were placed at his disposal for observation. The details for the manufacture of the drug are not given to the public; in this Prof. Ehrlich has exercised a praiseworthy caution. Placing a drug that will be in such immediate demand all over the world, and used by men who do not exercise the precaution of reading and following out in detail the directions given for its preparation and administration, is a hazardous procedure, and failure in securing the best results obtainable for the patients through this treatment would follow. The longest period that patients have been under observation after this treatment is about eleven months. Prof. Ehrlich has reports on 7,000 patients treated. In this number there were six deaths; Ehrlich himself considers that only one might justly be attributed to the treatment. This drug has been used in the treatment of syphilis in all stages from the primary chancres to the deep specific lesions of the central nervous system. It seems to have the specific property of killing the spirochete in all its abodes in the tissue, *i. e.*, of curing syphilis in its three stages—primary, secondary and tertiary. Its most prompt action is in: (1) the syphilids and mucous patches, (2) in the gummata and, (3) in the chancre; the latter, however, is sometimes very rapidly cured. The lymphatic adenopathies speedily disappear.

It does not and should not be expected to reproduce tissues that have been destroyed by the spirochete. It will not restore destroyed columns of the cord or perforations of the palate or septum nor any other destroyed tissue. It does not produce an immediate increase in the size of the lesion by edema and swelling that was so marked in the early treatment of tuberculous lesions with tuberculin. On the contrary there is infiltration and therefore pressure on the neighboring structures. The drug relieves the shooting pain, the girdle sensation and the crises of tabes almost as a hypodermic of morphin would; and it lessens the cephalalgia of the intracranial gummata.

One of the striking factors in favor of the claims of this treatment is that the most rapid effect is produced on the external or visible lesions. The cures appear to be permanent, as less than one-half dozen relapses have been recorded and most of these were easily traceable to deficient doses or to improper administration; but the patient promptly responded to a second injection. It will be noted that this is a far better result than is obtained in the average by quinin in ague or antitoxin in diphtheria and would lead us to hope that we have really another specific remedy. Regardless of what its permanent effect in definitely curing syphilis by a single dose

may be its immediate effect places it far beyond any medicament that has so far been used in the treatment of this disease and makes one feel that every sufferer should have the advantages it affords.

It has been announced that this drug will not be given to the profession for use for a number of months, a fact which forced us to try other preparations of arsenic. The one with which I have been most familiar is the sodium cacodylate which we have been using for seven years to allay the pain of metastatic, osseous carcinomata. For this purpose I have been administering it in doses of from 3 to 6 grains by mouth and have given from 1 to 2 grains in single doses daily hypodermically, also using it for the various other purposes for which arsenic is indicated. One of its striking therapeutic effects is the rapid dissolution of the deposits in fibrinous pericarditis in children, when it is administered in doses of from 1 to 3, or even more, grains daily. Its chemical formula is $(CH_3)_2$ As O Na + $3H_2O$. It appears as a white amorphous powder readily soluble in water. As a solution it can be injected into the muscle without causing much discomfort. It is prepared and carried by most of the wholesale druggists in ampullas containing three-fourths of a grain and is one of the safest of the arsenical preparations for administration.

Fig. 1.—A chancre on the lip before treatment. Syphilis from the common drinking cup.

When the system becomes saturated, the patient has the typical arsenical breath, with a sense of gastric distress and loss of appetite. I have been giving it in doses of from 1 to 2 grains hypodermically into the muscles and it has a most striking effect on the syphilids, mucous patches and primary chancre. From the latter the spirochetes disappear completely in forty-eight hours, the induration is markedly reduced in twenty-four and it becomes a soft, clean ulcer in seventy-two hours. From that time on it repairs with the same speed as an aseptic sore of mechanical origin would heal in the same tissue. In other words, the sodium cacodylate seems to destroy the specific micro-organism (the spirochete) which is keeping up the irritation. The adenopathies, except those with suppurating central foci, disappear in four or five days. The mucous patches repair in from twenty-four to forty-eight hours, the advancing ulcers of the palate and posterior wall of the pharynx clear up and heal as healthy granulating wounds in from three to six days and the perforating ulcers of the palate repair in their margins leaving the perforation in a healthy condition. I have not pressed it in the tertiary lesions but will not hesitate when such cases come under observation as the toxic limitations of the drug and the line of safety in its administration are known.

Photograph 1 is from a patient, aged 17, who became infected in a cold sore on the lip from a drinking cup. The examinations for spirochetes were made at the Columbus Medical Laboratory and slides were preserved; the spirochetes were numerous. The patient received two injections of ½ grain each into the pectoral muscle, twenty-four hours apart. Forty-eight hours after the primary examination (at which time only a clean soft ulcer without induration remained), numerous slides were prepared for spirochetes, both at the Columbus Laboratory and at Mercy Hospital and all were negative. The injections were continued in ½ grain doses for eight days, then from the eighth to the twelfth day in ¾ grain doses and permanently discontinued. The patient showed none of the physiologic effects of arsenic.

Fig 2.—Patient shown in Figure 1, nine days after treatment of syphilis with arsenic preparation.

Photograph 2 shows the condition of the ulcer nine days after treatment was instituted as a small abraded surface without induration and no larger than a grain of flax-seed and thirteen days from the initial treatment the ulcer was completely healed with no evidence of the disease remaining.

This case was demonstrated in all its stages to the visiting physicians at Mercy Hospital.

In a child nine months old with a papillary syphilid, a ¼ grain dose was administered into the pectoral muscle. The rash entirely disappeared in forty-eight hours. In a patient with active gastric crises, two 2-grain doses were administered into the pectoral muscle, twenty-four hours apart, followed by entire cessation of pain, while in his innumerable former attacks the pain lasted three weeks.

A perforating ulcer of the palate in the service of a colleague continued to advance in its destruction under daily injections of ¼ grain doses of mercuric bichlorid. Two injections of three-fourths of a grain each, of cacodylate of sodium, caused the gray surface to disappear and the margin of the ulcer to heal over in six days.

These incomplete reports are published merely as suggestions to practitioners who are willing to try a remedy as safe as sodium cacodylate and who have numerous cases coming under their observation, as the only syphilitic cases I encounter are those presenting surgical lesions.

I would further suggest that the primary dose should be from 2 to 4 grains, depending on the size and strength of the patient and should not be repeated within three or four days unless there are special indications for it.

I have never seen such effects produced by any form of treatment.

I have not given it by the intravenous method but I will so use it in a more dilute form, in the same size doses. Prof. Ehrlich has been kind enough to send me, through Dr. McKenna, twenty-five doses of "606" which are due in Chicago in a few days and which I shall use in control cases with sodium cacodylate.

100 State Street.

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# New and Nonofficial Remedies

SINCE THE PUBLICATION OF THE BOOK "NEW AND NONOFFICIAL REMEDIES, 1910," THE FOLLOWING ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK ARE ASKED FOR.

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

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*(Continued from page 666)*

**GUAIACODEINE. — Codeine - Ortho - Guaiacol - Sulphonate.** Guaiacodeine is Codeine - Ortho - Guaiacol - Sulphonate $C_{18}H_{21}NO_3C_6H_3(OH)(OCH_3)(HSO_3)1:2:6 = C_{25}H_{29}O_8NS$, the neutral codeine salt of guaiacol sulphonic acid.

Guaiacodeine is produced by the double decomposition of a soluble salt of codeine with the potassium or barium salts of ortho-guaiacol-sulphonic acid taken in molecular quantities.

It is a white crystalline powder. Soluble in 90 parts of water, 450 parts of alcohol and 30 parts of methyl alcohol, insoluble in ether; very slightly soluble in chloroform. Very soluble in hot water.

A drop of solution of ferric chlorid added to a solution of the salt in water or alcohol produces a deep blue color, indicating the presence of ortho-guaiacol-sulphonic acid.

The salt melts between 163° C. and 165° C. (325.4 and 327.20 F.) to a white liquid. 0.1 Gm. dissolves in 10 Cc. concentrated sulphuric acid without color.

Theoretically, the salt contains 59.44 per cent. anhydrous codein, or 63.20 U. S. P. codeine (containing 1 molecule of water of crystallization) and 40.56 per cent. ortho-guaiacol-sulphonic acid.

Ammonia and alkalies precipitate from a concentrated solution of the salt the alkaloid, codeine, which should respond to the tests of the U. S. P. for that alkaloid

*Actions and Uses.*—Those of Codeine. Since the proportion of guaiacol is small it cannot well be used to secure the action of this agent.

Manufactured by the New York Quinine and Chemical Works, New York.
U. S. patent No. 432,233. Not trademarked.

**SOPHOL.**—Sophol is a compound of silver and methylennucleinic acid, the silver being in organic ("masked") form.

It is prepared by conversion of insoluble silver compounds of methylennucleinic acid into soluble silver compounds by treatment with neutral salts, such as chloride of sodium. Sophol is a yellowish powder, having a metallic taste and claimed to contain silver, equivalent to not less than 20 per cent. metallic silver. Sophol is readily soluble in water, the aqueous solution having a faint alkaline reaction; it does not give a precipitate on the addition of dilute solution of sodium hydroxide or of sodium chloride; it is insoluble in ether and alcohol.

If 0.3 Gm. sophol is heated in a test-tube decomposition occurs with the development of brownish-red pungent vapors. If the ash is treated with dilute nitric acid, the solution filtered, a white cheesy precipitate is formed on addition of hydrochloric acid, which dissolves in ammonia water.

If 0.5 Gm. sophol is boiled with 5 Cc. of sodium hydroxide solution, the latter assumes a black color with the development of a formaldehyde odor.

If 0.1 Gm. sophol is heated with 3 Cc. nitric acid, a dirty yellow precipitate is formed, disappearing on addition of an excess of ammonia water with the formation of an orange colored solution.

A solution of 0.5 Gm. sophol in 10 Cc. water should have a faintly alkaline reaction and should not at once become turbid on the addition of sodium chloride solution.

If 1.0 Gm. sophol is shaken with 10 Cc. of alcohol and filtered, the filtrate should not be changed on addition of hydrochloric acid.

*Actions and Uses.*—It is said to act as a germicide and to be free from irritating effects in the solutions ordinarily employed.

It is said to be especially useful for the prevention and treatment of ophthalmia neonatorum and may be employed in other eye affections and for the general indications of the silver salts.

*Dosage.*—Sophol may be applied in from 2 to 5 per cent. solutions.

Manufactured by Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, Germany (Farbenfabriken of Elberfeld Co., New York). U. S. patent No. 852,545. U. S. trademark No. 62,900.

## PHARMACEUTICAL PREPARATIONS ACCEPTED FOR N. N. R.

The following dosage forms of accepted proprietary articles have been accepted for N. N. R.:

*Adrin Inhalent Comp.*—Epinephrine Inhalent Comp., Mulford.—Each 100 Cc. contains epinephrine (as hydrochloride), 0.1 Gm. (7/16 of a grain in a fluidounce), camphor, 0.3 Gm. (1½ grains in a fluidounce), menthol, 0.22 Gm. (1 grain in a fluidounce), thymol, 0.043 Gm. (1/5 of a grain in a fluidounce), oil of eucalyptus, 0.22 Gm. (1 minim in a fluidounce), and hydrastine, 0.0053 Gm. (1/40 of a grain in a fluidounce), oil of wintergreen, 0.99 (4.5 minims in a fluidounce). The solvent is a mixture of castor and cotton seed oils, together with 10 per cent. absolute alcohol by volume.

*Adrin Troches.*—Troches of Epinephrine—Mulford—each troche contains epinephrine, 0.000093 Gm. (1/700 grain), menthol, 0.0013 Gm. (1/50 grain), benzoic acid, 0.0027 Gm. (1/25 grain), oil of gaultheria, 0.0034 Gm. (1/20 grain), and eucalyptol, 0.0013 Gm. (1/50 grain). The base is sugar with a small amount powdered acacia.

*Friable Tablets Protan. 2½ grains.*—Each tablet contains protan, 0.16 Gm. (2½ grains).

*Friable Tablets, Protan, 5 grains.*—Each tablet contains protan, 0.32 Gm. (5 grains).

*Friable Tablets Protan, 7½ grains.*—Each tablet contains protan, 0.48 Gm. (7½ grains).

## ARTICLES ACCEPTED FOR N. N. R. APPENDIX

Reinschild Chemical Co., New York.

*Extractum Chinae Nanning.*—A liquid extract of red cinchona said to contain cinchona alkaloids 5 per cent., cinchona tannins 7½-10 per cent., glycerine 30 per cent., water 55-57½ per cent.

*Dose.*—1 to 1.25 Gm. (15 to 20 minims) three times a day.

*(To be continued)*

# Therapeutics

## VACCINE THERAPY

Although every month, almost, changes the status of treatment with vaccines, and although methods of preparation and the strength of the solutions injected are almost as frequently modified, still one should keep up with the times and know the exact scientific belief in regard to the value and utility of vaccinations. Hence it is with pleasure that one reads the conservative, terse, and scientific article of Dr. Wilder Tileston, of New Haven (*Boston Med. and Surg. Jour.*, March 24, 1910).

Immunity is a variable condition, varying not only with the individual, but with the bacterium. Natural immunity occurs for a shorter or greater length of time after a person has had an infection. Artificial immunity to a given germ is caused in two ways: first, by inoculation with non-fatal doses of this bacterium, "active immunization;" second, by the inoculation of an antiserum, a serum which develops in the blood of a man or animal who has become more or less tolerant to a given germ. Injections of this serum into a subject susceptible to the germ, causing him to be more or less immune, is called "passive immunization." Tileston says, "There is a wide difference between the use of the various anti-sera and the injection of bacterial vaccines; the former are chiefly employed for their direct action on the bacteria or their toxins, the latter to stimulate the formation of protective bodies.

"These latter substances, or antibodies as they are often called, are found in the blood serum and act in various ways; the bacteriolysins destroy the bacteria, the antitoxins neutralize the bacterial poisons, the agglutinins bring about a clumping of the organisms, and, last but not least, the opsonins act on the bacteria in such a way that they can be taken in by the polynuclear leucocytes, a process known as phagocytosis."

There is always a certain amount of opsonin, the stimulant to polymorphonuclear activity, in the blood serum. Probably there are various kinds of opsonins to aid in the fight against the varying kinds of bacteria, and Wright has shown by laboratory methods that the amount of opsonin varies at different times, and especially varies during the progress of an infection. This is termed the opsonic index. This opsonic index may be increased by well-timed inoculations with the germ that is causing the disease. Scientifically the amount of the dose and the right time to administer it can only be determined by a prolonged laboratory examination of the patient's blood serum. This process, however, is too tedious, and is so easily subject to error, that it is not practical in general medicine. There can be no question that the inoculation of too large doses cause harm. This has been thoroughly proved in the use of tuberculin. On the other hand, Wright has shown that too small doses are of no value in raising the opsonic index. The clinical deduction is to begin with very small doses and carefully watch the fever and prostration reaction. If there is fever to amount to anything and much prostration, the dose was too large; if there is no indication of action from the injection, the dose was too small.

Pasteur showed in 1880 that chicken cholera could be prevented by vaccination of fowls with this organism, and later that this principle would apply to infections of other animals. In 1894 Pasteur and Haffkine demonstrated that human beings could be inoculated against cholera and become immune for some time. Over 100,000 persons were inoculated against cholera in India. The number of inoculated persons attacked by the disease was one-tenth that of those who were not so inoculated, but it was found that if the disease did attack an inoculated individual the course of the disease was just as severe as in the non-inoculated. The protection against cholera, then, was positively demonstrated. It has also been shown that inoculations against the bubonic plague has caused the mortality to be ten times less than in the non-inoculated. The protective influence of these injections develops in twenty-four hours, and immunity has been found to last several years.

Both in England and Germany protective inoculations against typhoid fever have been demonstrated to be of value. The protection in some instances has been found to last four years. For several weeks there occurs what has been termed the negative phase of the protection during which period the individual is more susceptible to typhoid infection; therefore if individuals are to be exposed to typhoid fever or must go to typhoid regions or where they are likely to become infected with typhoid, a protective injection should be given a month before. Individuals who have contracted typhoid fever after a protective injection of several weeks before have had the disease very mildly and the mortality is much diminished. As Tileston says, it seems proved that soldiers going to regions of poor sanitation should receive protective injections against typhoid. Also, nurses and ward tenders should be protected against typhoid.

Shiga believes that protective inoculations against bacillary dysentery do not prevent the disease but reduce the mortality when the disease occurs.

Some investigators believe that vaccination against secondary infections after operations under conditions, or in regions of the body in which infection will almost surely occur, is advisable. Such protective injections have been made with the *Staphylococcus aureus* and *Streptococcus*, and with the *Bacillus coli* if the operation was on the alimentary tract. It is still a question whether such injections are advisable.

In local infections without general symptoms and with the localized infection or suppuration walled off from the rest of the body by the protective powers of the blood and tissues, but not tending to heal or to be absorbed, injections to increase the opsonic power of the blood have proved of the greatest value. The protective exudate around these localized infections, as stated by Tileston, "become poor in opsonins, owing to the absorption of these substances by the bacteria; phagocytosis is at a standstill and the bacteria are free to multiply. Add to this, in the case of abscesses the tryptic substances set free by the disintegrating leucocytes, with their deleterious action on the tissues, and we have a combination of conditions unfavorable to cure." We hasten cure by evacuating the pus and draining the region, and by stimulating the constructive powers of the body by giving stimulating drugs and pushing nutrition.

A still greater aid to hasten cure seems to be a vaccination with a culture grown from the particular germ of infection; in other words an autogenous vaccination. While so-called stock vaccinations, vaccination with stock cultures of the type of germ of the infection are of some value, the various strains, especially of a pus producing germ, vary so much, and, evidently, vary so much in the kind of opsonins that is needed to eradicate them, that it has been found that vaccination with cultures from the germ that is infecting the individual is of much greater value. Such vaccinations cause increased hyperemia around the localized disease and the increased cir-

culation thus caused is another aid in eradicating the infection. This is the reason that the Bier hyperemic treatment of localized inflammation and infection becomes of value. In other words, the opsonins are increased and the phagocytosis more active and the eradication of the infection goes on more rapidly, if the circulation in the diseased region is stimulated. These truths are especially demonstrable in lupus where tuberculin tends to cure the ulcerative type, but when the lupus is of the dry, scaly variety it is necessary for success to combine with the tuberculin injections the use of the *x*-ray to cause local hyperemia.

This vaccination treatment to aid the production of necessary opsonins in the blood will, when generally adopted, make repeated and recurrent furunculosis and carbuncles rapidly amenable to cure. Slight incisions to evacuate the pus and dead tissue are necessary, but as Tileston says, extensive surgical measures will be unnecessary, if the patient is vaccinated with an autogenous vaccine.

Vaccinations in pustulent acne are rather unsatisfactory. The same is true of erysipelas.

Septic infections should certainly be vaccinated with stock vaccine and then as soon as an autogenous vaccine can be developed it should be used. The pneumococcus vaccine seems to be of most value when the pneumococcus has attacked other parts of the body than the lung, as in pneumococcic empyema or in a pneumococcic joint inflammation.

It seems now to have been sufficiently demonstrated that gonococcus vaccine is very valuable when the gonococcus has invaded joints, and especially valuable where the inflammation has been prolonged and become almost chronic. In acute infections it is of much less value. As supposable from what is known of the lack of protection or immunity after one attack of gonorrhea, the immunity from injections also does not last long. In gonorrheal urethritis, acute and chronic, in gonorrheal prostatitis and epididymitis vaccination has not been shown to be of much value. In gonorrheal vulvovaginitis of children Tileston thinks this vaccine aids recovery more than most other treatments, but still is not very satisfactory.

A number of colon bacillus infections, especially when this germ has infected the pelvis of the kidney and the bladder, have seemed to have been benefited by vaccination with this germ.

The value of tuberculin in tuberculosis, in properly selected cases, seems to be now unquestionable. Its curative value is demonstrated in tubercular inflammations in the eye, in the larynx, and in many instances in the lungs. It is yet to be demonstrated that it should always be used in tuberculosis of the lungs. There is no question that it should be exceedingly carefully used in all early stages of tuberculosis, especially in tuberculosis of the lungs. It is very pleasing to note that in tuberculous lymph nodes, especially of the neck, tuberculin injections are shown to be exceedingly valuable as preventing the necessity of severe surgical procedures and the production of very unsightly scars to last the rest of the individual's life, and to prevent the removal of the chains of glands, which, when removed, means the removal of so many guards against entrance of germs to more susceptible structures, especially the lungs. If a tuberculous gland has become an abscess, the pus must of course be evacuated, through a small incision or even aspirated, and the tuberculin treatment begun. If there is caseation, cheesy masses must be removed surgically, but it would seem unjustifiable from the records to do gross surgery on the neck until tuberculin treatment had been proved not to cause resolution of the enlarged glands.

A tuberculous joint and tuberculous structures in the region of joints should be placed at rest, the patient given the benefit of fresh air, and tuberculin injections used, and many times operation will be unnecessary.

It has not yet been shown that tuberculin can be depended on positively to cure a tuberculous kidney, hence if it has been shown that one kidney is perfectly healthy, the diseased kidney should be removed; but if both kidneys are affected with tuberculosis, or if the other kidney is found not to be perfect in its function, tuberculin injections still offer a possibility of recovery.

If tuberculosis has generalized, in an adult, in the intestines, tuberculin is really of value. On the other hand, if the disease of a tuberculous patient, under proper treatment, seems to be at a standstill, small injections of tuberculin often stimulate the ability to combat the disease and cause the lesions to heal. It seems from the results of some investigators that infantile tuberculosis may be healed by tuberculin injections.

As has been previously stated in this department, tuberculin injections should not be given without some experience and a great deal of study of the subject. Therefore, it is not the object of this abstract to discuss either the method or the dosage of tuberculin, but to show how far the sucess of the treatment has advanced.

A vaccine has been prepared from a bacillus supposed to be the cause of whooping-cough, and some investigators have thought they obtained benefit from such injections. The same is true of pyorrhea alveolaris; but these are still subjects for investigation.

Vaccination in pneumonia has given in some instances a better prognosis and a diminished mortality, and sometimes seems to hasten the crisis. The best results are doubtless obtained from an autogenous vaccine.

Vaccines during the course of typhoid fever seem to be of little if any value.

Tileston quotes the following doses for vaccines:

From 100 to 1,000 millions staphylococci.
From 5 to 200 millions streptococci.
From 10 to 200 millions pneumococci.
From 5 to 500 millions gonococci.
From 10 to 200 millions colon bacilli.
From 1-10,000 to 1-500 mgm. tuberculin T. R.

A marked change for the worse one or two days after injection shows that a dose was too large and should be reduced. A temporary improvement soon followed by a relapse shows need for a larger dose. Naturally, debilitated persons and young children should receive smaller doses than the stronger and adults. Children, however, tolerate tuberculin pretty well. The frequency of the dose depends largely on the reaction, generally acute infections requiring smaller doses at short intervals, and chronic conditions larger doses at longer intervals, from four days to two weeks. The beginning dose should generally be quite small and then the dose rapidly or slowly increased, depending on the reaction. Tileston says "for general infections the doses are smaller than the above; of the streptococcus 5 to 25; of the pneumococcus 20 to 50; of the gonococcus 5 to 100; and of the colon bacillus 10 to 50 millions." He well decries the use of mixtures of various bacteria hoping that some particular germ of this mixture will fight some particular germ in the body. This is much like the old "shotgun prescriptions." It certainly seems inadvisable to inject a germ into a patient to help him fight against something that he has not got.

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[*For other information see second page following reading matter*]

SATURDAY, SEPTEMBER 24, 1910

## HABITAT OF TYPHOID BACILLI IN CARRIERS

Although the recognition of the importance of "carriers" in the transmission of infectious diseases was surprisingly and seriously tardy, yet, now that this source of infection has come to be appreciated, the advance in our knowledge of the subject has been rapid. We have learned that not only are diphtheria and typhoid frequently spread in this way by apparently healthy individuals, but that meningococcus infections, and probably several other diseases, are perpetuated in endemic or epidemic form by carriers who either may have had the disease and recovered, or are hosts of an organism pathogenic to others but to which they themselves are immune. It is in connection with typhoid and paratyphoid that infection by bacillus-carriers has been especially considered within the last few years, and with these diseases it has been believed that the habitat of the infecting organisms is chiefly the gall-bladder, and their avenue of escape the bowels. It has also been recognized that in some cases the bacilli are discharged in the urine for many years after convalescence from typhoid, and in these cases the place in which the bacilli are multiplying and from which they are discharged into the urine is often a problem. In some instances a definite cystitis, pyelitis or nephritis explains the persistence of the organisms, but in other cases there is no evidence of such lesions and the administration of urinary antiseptics may fail to remove the bacilli from the urine.

An explanation of these cases has been advanced by Marchildon,[1] who has found, in two fatal cases of typhoid, infection of the seminal vesicles and prostate. In view of the known tendency of infections of these organs to assume a chronic character and to discharge the causative organisms in the urine, there is reason to suspect that typhoid convalescents may harbor typhoid bacilli in this way; this should be especially suspected and investigated in patients with long-continued bacilluria in whom the micro-organisms disappear under treatment and then reappear at a later date.

Support to this suggestion of Marchildon's is furnished by comparative pathology through the recent investigations of Huet.[2] It seems that it has been frequently observed that male animals used for breeding purposes have transmitted to the females diseases from which the males had long since recovered. This has been reported several times with the influenza of horses, which is of particular interest since this disease, like typhoid in man, is not ordinarily localized in the generative organs. Huet examined the seminal vesicles of domestic animals, some of which animals were normal, while some had been infected experimentally with different organisms at varying periods of time before death, and found that frequently pathogenic bacteria can be found in the vesicles of perfectly healthy animals, while animals dying of experimental infections usually show seminal infection. Occasionally, in animals which had recovered from the infection, the germs could be demonstrated in the contents of the seminal vesicles even when the other viscera were quite sterile. From these several observations it is highly probable that typhoid bacilli frequently enter the contents of the seminal vesicles and prostate during typhoid fever, and that they may occasionally set up a chronic infection which can become a source of typhoid bacilluria of grave sanitary danger. Such localization of typhoid bacilli in the male generative organs can scarcely be a common cause of contagion, however, since about four-fifths of all known bacillus-carriers have been women, according to the review of Simonds;[3] nevertheless it is well that this source of danger has been pointed out, in order that it may not be overlooked in the search for typhoid carriers.

1. Marchildon, J. W.: Typhoid Spermatocystitis and Prostatitis, and Their Relation to Chronic Typhoid Bacilluria, Amer. Jour. Med. Sc., 1910, cxl, 74.

2. Huet, R. H. G.: Samenbläschen als Virusträger, Cent. f. Bakt., Orig., 1910, lii, 477.

3. Simonds, J. P.: Typhoid Bacilli Carriers and Their Relation to Public Health, Am. Jour. Med. Sc., 1910, cxl, 247.

## STUDIES IN ANAPHYLAXIS

The study of the phenomena of anaphylaxis has received considerable attention from investigators during the past year, and though sufficient time has not elapsed for the confirmation of all conclusions reached, much progress has been made in the knowledge of the subject. The later experiments and studies of Anderson and Frost[4] on the antibody concerned in the production of the phenomena of anaphylaxis lead them to conclude that this substance is quantitatively neutralized by the specific antigen; that it largely disappears from the serum of guinea-pigs during anaphylactic shock, but can be demonstrated in increased quantities in the serum of immune animals some time after recovery from such shock, and that it can be transferred to normal animals in such a way as to sensitize them against the antigen. To the antibody they give the name of "allergin," which they hope will be adopted as the

4. Bull. 64, Hyg. Lab. U. S. P. H. and M.-H. S., June, 1910. This is the fifth bulletin of the Hygienic Laboratory on anaphylaxis.

regular designation of this substance. They summarize their views on the whole subject of anaphylaxis as follows:

Anaphylaxis is a step toward immunity, which is conceived as an increased capacity of the organism for safely and rapidly eliminating a specific antigen protein. It is remarkable among immunity reactions chiefly in the fact that (in the guinea-pig especially) the stage of hypersusceptibility is strikingly constant, well-defined and of long duration.

Immunity is a state of relative insusceptibility, characterized by an increase in the amount of free anaphylactic antibody. Whether the insusceptibility of an immune guinea-pig is due to this excess of free anaphylactic antibody, to the formation of another free antibody, or to specific changes in the somatic cells is an open question.

Hypersusceptibility to a foreign protein consists in an increase in the normal power of assimilating this protein, especially an increase in the rapidity of the reaction. This is due to the formation of a specific antibody (or antibodies) demonstrable in somatic tissues (smooth muscle) and in the serum of sensitive guinea-pigs. The action of this antibody on its antigen is quantitative and is probably primarily proteolytic.

Anaphylactic shock is due to disturbance of metabolic activities of vital cells rather than to the specific (permanent) intoxication of cells.

Antianaphylaxis is a state of absolute insusceptibility, due to saturation of the specific combining receptors. It is a temporary condition and passes gradually into the condition of relative insusceptibility known as immunity proper.

The interest in anaphylaxis lies in its relation to immunity. In the present development and understanding of the subject it has not been proved that effective practical immunity to particular diseases can be produced in this way without causing more or less serious damage to the host in other directions. The principle is tremendously suggestive, however, and may lead to the most important results. It points to possible valuable discoveries in the treatment of tumors, to a better understanding of the phenomena of asthma, and to the fact that the action of tuberculin involves the principle of anaphylaxis.

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### THE LESSON OF POLIOMYELITIS

The increasing prevalence of anterior poliomyelitis has made it one of our most important diseases. On account of its insidious nature and its distressing—often permanently disabling—sequelæ, blighting, as it does, the lives of the young, it has especially appealed to human sympathy and has stimulated efforts along scientific lines to solve its difficult problems. No more forceful demonstration of the modern method of studying disease has been afforded than is found in the instance of epidemic poliomyelitis. Clinicians have made an intensive, systematic study of the disease and its epidemiology in the numerous localities in which it has appeared; but a still greater study is that which has taken place in the laboratories.

While it is true that some of the more important features have not yet been worked out—the causative organism, the question of immunity and a prophylactic or curative serum or vaccine—yet the laboratory study of the disease has progressed with such sure, swift steps that the early attainment of fairly complete knowledge of the disease is promising.

Most important among the studies have been those of Flexner and Lewis and their co-workers. The short notes published from time to time in THE JOURNAL, detailing the steps in the progress made in their experimental studies, and the final fuller paper of Flexner in this issue, giving a complete statement of the findings thus far made, the conclusions that may be drawn from them and outlining the requirements of the future study of the affection, constitute a striking record of results to be attained by persistent, systematic investigation in well equipped laboratories with every facility at command. This work has determined the pathogenesis, though not identifying the causative organism; has indicated the possibility of early diagnosis by examination of the spinal fluid, the probability of the establishment of an active immunity by injections of the attenuated virus; has established the presence of neutralizing principles in the blood of human beings as well as in that of monkeys following an attack of the disease, and has given some promise of the production of an immunizing serum in certain of the lower animals. All of which points to the early final solution of the problem.

It also is another instance of the absolute justification of animal experimentation in the study of the diseases of human beings.

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## *Current Comment*

### NATIONAL CONSERVATION CONGRESS AND A DEPARTMENT OF HEALTH

The National Conservation Congress, recently in session in St. Paul, adopted a platform setting forth the views of the delegates as to the duty of the federal and state governments in conserving the natural and vital resources of the nation. One of the planks, unanimously adopted by the committee on resolutions and later by the convention itself, endorsed in no uncertain terms the establishment of a department of health. This plank read: "We also recommend that in order to make better provision for preserving the health of the nation a department of public health be established by the national government." This declaration was adopted in spite of a large amount of carefully stimulated (and simulated) opposition. The plank was introduced before the com-

mittee on resolutions by a delegate from Pennsylvania. As soon as it was known that there was likelihood of its adoption telegrams from all over the country began to pour in on the members of the committee on resolutions, requesting, urging and demanding that no action be taken on this subject. On Thursday morning, when the delegates assembled in the auditorium, there was found on each seat a marked copy of the *Pioneer Press* containing a full length, two column "appeal" (otherwise known as advertising matter) from the National League for Medical Freedom, reiterating previously made statements regarding "political doctors," "medical trust," "interference with liberty" and other stock bugbears. But, as a reporter for the *Pioneer Press* said, "the delegates smiled." The men composing the convention, who had been sent to St. Paul to represent the interests of the people and not the people of the interests, who had been able to detect the cloven hoof of monopoly under the specious plea for "state rights" which had been made in the opening days of the convention, were not slow to understand who and what were the influences back of the objections to governmental action for the saving of life. "The delegates smiled" when they received the telegrams, when they adopted the resolution of the committee and when the unanimous vote of the convention approved the platform. It was the sound judgment and common sense of the average American citizen which led the delegates to realize that health and life are important and that the only men who oppose any means by which life can be saved are those who have a selfish and mercenary interest in perpetuating present conditions.

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## THE SEROTHERAPY OF ASIATIC CHOLERA

As is well known, the serotherapy of cholera has thus far not been markedly successful. In the Russian epidemic of 1908-9 three kinds of antiendotoxic and two of antitoxic serum were used. Stühlern[1] ascribes greater potency to the former, particularly when administered in large quantities by the combined intravenous and subcutaneous method supplemented with copious saline infusion. It must be admitted that even the serum giving the best results (Schurupow's) did not lower the mortality rate below 30 per cent. One of the recent reports on an anticholera serum is that by Salimbeni,[2] who conducted his experiments, for so they must properly be called, in St. Petersburg during the serious outbreak in that city in the summer and autumn of 1908. The method used was that proposed as long ago as 1896 by Roux, Metchnikoff and Salimbeni himself and recently described in detail by the latter writer.[3] The serum used in St. Petersburg was obtained from two horses "strongly immunized against the soluble cholera toxin," and 0.025 c.c. is said to have neutralized *in vitro* in 10 minutes twice the minimum lethal dose of cholera toxin for a guinea-pig of 250 grams. The article cited deals with only 42 cases, so that very general conclusions are hardly warranted. In this number, the mortality rate was about 24 per cent. The protocols of the individual cases indicate that no harm resulted from the serum injection (50 to 150 c.c.), and that in some cases benefit may have been produced. However, even under the most favorable interpretation, the curative power of the anticholera serum used in these observations does not seem very high.

1. Med. Klinik, 1909, v, 1452; THE JOURNAL, Nov. 6, 1909, p. 1604.
2. Ann. de l'Inst. Pasteur, 1910, xxiv, 34.
3. Ann de l'Inst. Pasteur, 1908, xxiii.

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## SANITARY WORK IN BRAZIL: GOOD HEALTH A COMMERCIAL ASSET

Vice-Consul-General Slechta, of Rio de Janeiro, reports regarding the work of Dr. Oswald Cruz, to whose transformation of Rio de Janeiro from one of the most unhealthful to one of the most healthful of cities several references have appeared in THE JOURNAL. Dr. Cruz is now in the Amazon Valley carrying on a campaign against yellow fever, malaria and other diseases which have prevented the extension of commerce and industry in that region. The first work undertaken was in connection with the railroad being built around the falls of the Madeira and Mamore rivers, 500 miles south of the export rubber market of Manaos. The American contractors who are constructing this road have encountered great difficulties owing to yellow fever, malaria, beriberi and other diseases and have finally entered into a contract with Dr. Cruz to direct the work of sanitation along the right of way of the railroad and to stamp out diseases so far as possible in order to permit the completion of the railroad. It is also planned to undertake the suppression of yellow fever at the port of Para at the mouth of the Amazon, as well as at Manaos. The prevalence of yellow fever and malaria in the Amazon Valley has been one of the chief handicaps in the extension of trade and commerce and especially in the development of the rubber business. It is a sad commentary on human nature but an increasingly apparent fact that good health and the suppression of disease are attracting far greater attention now because their bearing on commerce and business is becoming evident. So long as it was merely a question of saving human lives the public remained apathetic. Now that good health and hygienic conditions are becoming recognized as business assets, we may look for increased interest and activity in the prevention of disease.

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## "VIVISECTION" NO MORE PAINFUL THAN TAKING CASTOR OIL

The statement has recently appeared in a number of newspapers that the Bureau of Animal Industry at Washington had entered into arrangements with the district commissioners of Washington, whereby the commissioners were to turn over to the bureau for experimentation the stray dogs of the city. In a number of cases, these statements were accompanied with comments expressing horror at the cruelty of the "experimenters" and "vivisectors" employed in the government service and protesting against the Department of Agriculture entering on a career of wholesale vivisection. A more sensible method of procedure is shown in the following from *Our Dumb Animals*, the official organ of the Massa-

chusetts Society for the Prevention of Cruelty to Animals, a publication which can hardly be regarded as prejudiced in favor of animal experimentation:

**A wide-spread indignation among humane people, and particularly among the foes of vivisection, has been aroused by newspaper reports to the effect that the Bureau of Animal Industry has entered into arrangements with the district commissioners of Washington whereby the former was to have turned over to it for experimentation the stray dogs of the capital city. Knowing how little confidence is to be placed in the ordinary newspaper report, we wrote at once to the department for the facts. Our readers will be interested in the reply which we summarize as briefly as possible:**

**There is a disease known as "gid" from the symptoms of giddiness which it commonly produces in affected animals. It is transmissible from dogs to ruminants only. Of the domestic animals, sheep are most often the sufferers from this trouble. The disease is prevalent in the northern half of Montana. It is generably traceable to imported sheep or imported sheep-dogs. The most effectual way to eradicate this disease is to keep dogs, particularly sheep-dogs, free from tapeworms, the multitudinous eggs of which scattered about the pastures are the immediate source from which sheep, cattle and other ruminants become infected with the disease.**

**The Secretary of the Department of Agriculture writes that arrangements were made whereby the district commissioners of Washington should supply a number of unclaimed dogs from the pound for use in investigations connected with this disease. He states, however, that nothing more painful can happen to these dogs than would be experienced in taking a dose of castor oil. The desire is to find the best vermifuge, that is the one most efficacious and suitable for the expulsion of tapeworms.**

We commend the caution shown by the editors of *Our Dumb Animals* in going to headquarters for an authoritative statement instead of relying on garbled and misleading newspaper items. If all the advocates of humane treatment for animals would follow the same course with regard to their statements and "statistics," much of the misconception which surrounds this question would be dissipated. As has been shown repeatedly, there is an exceedingly small amount of suffering connected with "vivisection"; most of the "evidence" submitted by the opponents of animal experimentation is the result of misconception or a heated imagination.

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### SUGGESTION AND NOSTRUMS

One of the cruellest and most despicable phases of the "patent medicine" business is the studied effort made by nostrum exploiters to frighten their victims into the belief that they are suffering from some more or less serious disease. Not content with the sale of their preparations to those who have—or who believe they have—one of the many diseases for which the products are recommended, the "patent medicine" venders strive to create an artificial demand for their stuff by working on the imagination of the healthy and persuading them that they are sick. The scheme is an old one but none the less disreputable. One of the more recent modifications of this trick is the "gall-stone remedy" fake, a type of which is described in the Pharmacology department of this issue. Hundreds and possibly thousands of people have been humbugged by this scheme and, unless physicians enlighten the public, thousands more will be. Once let people know that they are asked to pay a dollar for a few cents' worth of olive oil and a couple of Seidlitz powders and the number of cases of (imaginary) cholelithiasis will be reduced.

## *Medical News*

### DISTRICT OF COLUMBIA

**Higher Requirements.**—Word from Dr. William C. McNeill, secretary of Howard University School of Medicine, states that, beginning this fall, one year of collegiate work, including the subjects: physics, chemistry and biology, and a reading knowledge of German or French, will be required for admission. The name of this college was omitted from the list published in our Educational Number of those schools which were requiring one year of collegiate work for admission.

**Personal.**—Dr. MacPherson Crichton, Washington, appeared before the Justice of the Police, August 29, for a preliminary hearing on the charge of manslaughter, alleged to have been due to an automobile owned and driven by Dr. Crichton. A bond of $5,000 was given at the time for his appearance. It is said that he has been arraigned three times for unlawful automobiling and was held on bonds of $150 in each case for his appearance September 4.——Dr. Charles S. White, Washington, has been appointed deputy coroner by the District Commissioners, vice Dr. Larkin W. Glazebrook, resigned to become chief surgeon of the Washington Railway and Electric Company.

**Studying Poliomyelitis.**—The Medical Association of the District of Columbia at its meeting, August 23, 1910, appointed a committee to investigate and report on the status of epidemic anterior poliomyelitis in Washington. The disease has been prevalent in Washington during the summer, as it has in many other places, and this action is in line with that taken in other localities, to obtain all the information possible on its etiology, epidemiology, course, diagnosis, etc. The committee desires complete records of all cases occurring in the district in both private and hospital practice and to that end has prepared and sent out a circular letter explaining the object of the inquiry and requesting the cooperation of physicians in making the investigation complete. A question blank covering all angles of the disease accompanies the letter. The points to be covered in the inquiry are as follows:

1. Whether the secretions of the nose and throat are capable of carrying the disease, and, if so, when the period of infectivity begins and when it ends.
2. Whether it is possible by any method to recognize the disease with certainty before the onset of paralysis, and, if so, how.
3. Whether it is possible by any method to identify abortive or atypical cases, and "carriers," if "carriers" exist, who present no clinical symptoms.
4. Whether any intermediate host, such as insects or domestic animals, may be responsible for the transmission of the disease.

### ILLINOIS

#### Chicago

**Personal.**—Dr. Mortimer Frank has been appointed a member of the Chicago Public Library Board.——Drs. G. Paull Marquis and William L. Baum have gone to Europe.

**Health League Organized.**—At a meeting held September 14 in Hull House theatre, the Chicago Health League, an organization to join all forces of the city, individual and municipal, in a cooperative effort for better sanitary living conditions, was formed. Dr. H. Cohen presided, the sanction of the department of health was given to the enterprise, and Health Commissioner Evans stated that an organization embodying all the functions of the numerous associations would tend to make more perfect sanitary conditions.

### INDIANA

**Public Comfort Station Dedicated.**—The first public comfort station in the state was dedicated in Indianapolis at the corner of Wabash and Illinois streets.

**Fraud Order Entered.**—The post office department is said to have entered a fraud order against Dr. Jacob W. Coblentz and the Compound Oxygen Company, Fort Wayne, who are alleged to have been exploiting a mixture called "Compound Oxygen."

**Addition to Hospital.**—Work has been begun on a large addition to the Methodist Episcopal Hospital, Indianapolis. The building will be four stories in height. Each floor will have a sun parlor. A roof garden will be added and 72 additional patients can be accommodated in the institution.

**Association of Charities Meeting.**—At the recent meeting of the State Association of Charities, Indianapolis was chosen as the next meeting place. Prof. U. G. Weatherby, of Indiana University, was elected president; Mrs. Wallace B. Campbell,

Anderson, secretary, and Dr. Samuel E. Smith superintendent of the Eastern Hospital for the Insane, Richmond, chairman of the executive committee. One of the chief topics discussed was that of farm colonies for the insane.

**Antituberculosis Work of the Red Cross.**—The Indiana State Organization of the Red Cross gave a demonstration at the State Fair at Indianapolis last week of the work being done for the prevention and treatment of tuberculosis. A cottage was erected on the fair grounds and the latest methods of prevention and treatment of tuberculosis were demonstrated.

**Tuberculosis Colony to be Established.**—The St. Joseph County Hospital has appropriated $5,000 for the establishment of a detention hospital and $3,500 for a permanent fresh air colony for tuberculosis.

**Personal.**—Dr. Joel M. Partridge, South Bend, is reported to be seriously ill in Epworth Hospital, South Bend.——Dr. E. S. Waymire, a member of the house staff of the Methodist Episcopal Hospital, has been appointed house surgeon of the Wabash Railroad Hospital, Peru.——Drs. Geo. D. Kahlo, French Lick, and Chauncey W. Dowden, West Baden, have returned from Europe.——Dr. Earl Green, Muncie, has been elected Captain in the Medical Corps, Indiana National Guard. ——Dr. Claude Lenox, Tell City, has gone to the Island of Molokai, to make a clinical study of leprosy.

## KANSAS

**Personal.**—Dr. Elmer E. Haynes, Lewis, has been elected director for the Southwestern Division of the North American Esperanto Association.——Dr. George H. Brown, a practitioner of Chaunte for more than thirty-five years, has given up practice on account of ill health and has moved to Kansas City. ——Dr. Franklin H. Redmond, Osawatomie, has resigned his position on the medical staff of the State Hospital.——Dr. Chilton W. McLaughlin, Kansas City, has been elected vice-president of the Bureau of Associated Medical Fraternities of the National Fraternal Congress.

## LOUISIANA

**New Home for Medical Society.**—A permit has been issued for the erection of a two-story brick building, in New Orleans, to cost $12,000, for the use of the Orleans Parish Medical Society.

**New Sanitarium to be Opened.**—The Louisiana Tuberculosis Sanitarium, Hygeia, was opened for inspection September 18. A main building has been erected at a cost of $6,000, together with several cottages, and a large amount of land has been set aside for cultivation.

**New President for State Board.**—Dr. Oscar Dowling, Shreveport, has been elected president of the State Board of Health, vice Dr. D. Harvey Dillon, New Orleans, resigned, and assumed the duties of his office September 1. Dr. Dowling announces his plan for an educational health campaign to be initiated at once throughout the state.

**City Health Board Organizes.**—The New Orleans Board of Health held its monthly meeting September 13. Dr. William T. O'Reilly was reelected chairman of the Board, Dr. Paul E. Archinard, bacteriologist; Dr. Abraham L. Metz, chemist, and Dr. Paul J. Gelpi, Jr., inspector of communicable diseases. It is announced that Dr. William H. Robin will succeed the late Dr. Sidney Theard as secretary and treasurer of the board and that Dr. James A. Henderson will become a member of the board in Dr. Robin's place.

## MARYLAND

**Hospital News.**—The trustees of Elkton Hospital have made an appeal for $7,000 to enlarge the hospital building.——The directors of Western Maryland Hospital, Cumberland, have purchased for $3,600, the residence opposite as a home for nurses. This will give ten more rooms for the use of patients. ——A new nurses' home and central heating plant are to be added to the Frederick City Hospital.——About $300 was raised at a picture show and automobile carnival at Havre de Grace, September 14, toward a fund for the proposed hospital in that place.

### Baltimore

**Sailed for Europe.**—Drs. Frank C. Ainley, J. W. Rosenfeld, Lawrence Selling, Caroline B. Towles, and Milton C. Winternitz, all of Johns Hopkins Hospital and Medical School, sailed for Europe September 14, to pursue clinical studies in Germany.

**Hospital Reports.**—The annual report of the Church Home and Infirmary shows an income of $73,075 with expenses of $71,100, leaving a balance in the treasury of $2,065.——The Maternité Hospital of the University of Maryland reports during the last year 201 confinements in the hospital and 865 in the outdoor department, giving an average of about thirty obstetric cases seen by each member of the graduating class.

## MISSISSIPPI

**Gift to Hospital.**—Mrs. Lemuel P. Conner, Natchez, has donated twenty-four rolling chairs, one hand-lever tricycle, and one child's rolling chair to the Natchez Charity Hospital.

**Health Exhibit at State Fair.**—The State Board of Health is preparing an exhibit for the State fair this fall which will include drawings and photographs of insects responsible for the spread of typhoid and malarial fevers, as well as the hookworm parasite. Mosquitoes which are malarial carriers will be shown side by side with mosquitoes of the harmless variety, so that the public can learn to distinguish between them. Pamphlets on the cause, prevention and cure of diseases most prevalent in the state will be distributed to the public at the same time. A display of the National Tuberculosis Exhibit is also being arranged for in connection with the State Board demonstration. It is anticipated that a large number of the people who attend the State Fair may be reached in this way.

## NEBRASKA

**Personal.**—Colonel John M. Bannister, Medical Corps, U. S. Army, has retired and will practice ophthalmology in Omaha. ——Dr. Howard B. Hamilton, Ainsworth, Iowa, has moved to Omaha.

**Medical Schools Open.**—The John A. Creighton Medical College, Omaha, opened for its annual session, September 1. ——The University of Nebraska, College of Medicine, Omaha, began its school year, September 13.

## NEW JERSEY

**School Medical Inspectors.**—East Orange has a waiting list of physicians who are desirous of becoming medical examiners in the public schools, although it has been reported from some sections of the state that physicians are averse to accepting these appointments on account of the small fees allowed by the school inspection law.

**Camden Health Board Tests Candy.**—"Kelly" candy balls, a popular confection, are believed to have caused the illness of many children in Camden, but so far only three serious cases have developed. In these the infection first showed itself in blotches and later the tongue became greatly swollen, almost filling the mouth. Some of the candy has been sent to the State Health Board for analysis.

## NEW YORK

**The Tuberculosis Campaign.**—The State Department of Health has assembled a large and comprehensive traveling tuberculosis exhibition, which has formed a very important feature in local campaigns. The work of the immediate future will consist of individual county campaigns, and the use of small tuberculosis exhibitions in many of the smaller towns throughout the state.

**Tent Hospital Opened.**—The temporary tuberculosis hospital was completed at the Monroe County Farm, Brighton, September 3, and two days later patients were received for treatment. The hospital consists of three apartments, a porch, a sleeping room, and a dining room. The sleeping room will accommodate eighteen patients. It is not expected that the new county hospital will be opened before next spring.

**Personal.**—Dr. Albert E. Leach of Mount Morris was seriously injured in a collision between his automobile and a locomotive on September 13.——Dr. E. S. McClellan, president of the Saranac Lake Board of Health, was struck by a passenger train, September 3, fracturing a rib, spraining a wrist, and sustaining numerous contusions. Notwithstanding the advanced age of Dr. McClellan, he is reported to be making a good recovery.

### New York City

**Personal.**—Dr. Carlos F. MacDonald has returned from Europe.——Dr. Jacques C. Rushmore, Brooklyn, Dr. and Mrs. Isadore W. Held and Dr. and Mrs. Elon N. Carpenter have sailed for Europe.

**Women to Work for Pure Milk.**—An organization has recently been formed by some women at the Hotel Astor, to be known as the International Pure Milk League. They intend to investigate all matters having a bearing on the production and price of pure wholesome milk. In New York City they will cooperate with the health department.

**Better Care for School Children.**—The common drinking cup has been banished from the public schools of this city. While great care has recently been exercised in regard to the teeth of the children not so much has been directed to caring for the eyes and this year the following instructions will be pasted in each book:

Never read in bad light. Always hold your head up when you read. Your eyes are worth more than any book to you. Hold your book about fourteen inches from your face. Let the light come from behind or over your left shoulder. Your safety and success depend on your eyes: take care of them. Rest your eyes by looking away from the book every few moments. Avoid books or papers printed indistinctly or in small type. Never read with the sun shining directly on the book. Wash your eyes night and morning with pure water. Be sure that the light is clear and good. Never face the light in reading.

Dr. Maxwell, superintendent of public instruction, who has just returned from Europe, where he made a study of schools, found the German schools far in advance of ours as regards cleanliness and neatness of both rooms and pupils.

## NORTH CAROLINA

**Land Deeded to Hospital.**—The town of Woolsey having lost its charter and become a part of the city of Asheville, the executors of the late Colonel Woolsey have deeded, without reservation, the town hall and adjoining lots to the Mission Hospital, Asheville.

**Antituberculosis Association Organized.**—On August 23, the Edgecombe County Antituberculosis Association was organized in Tarboro. Dr. S. P. Bass, superintendent of the local board of health, presided, and at the election of officers was made secretary-treasurer of the association.

**Personal.**—Dr. William H. Moss, who has resided for the last seven years at Atlanta, Ga., has returned to his former home, Charlotte, and will resume practice there.——Dr. William T. Carstarphen, Kittrell, has been elected professor of physiology in Wake Forest Medical School.——Dr. Hubert A. Royster, Raleigh, has been unanimously elected president of the Chamber of Commerce of that city.

**Hookworm Investigation.**—Dr. John A. Ferrall, assistant secretary of the State Board of Health for Hookworm, working under the Board and the Rockefeller Commission, has completed a careful canvass of the state, and has demonstrated the presence of hookworm in every county. The field is divided into districts and is being actively worked in order to familiarize both the profession and the public with the symptoms, results and treatment of the disorder. The commission is expending $20,000 a year in the state for this work.

## OKLAHOMA

**College Opens.**—The Oklahoma City department of the State University Medical Society opened for its annual session, September 16, with an address by President A. Grant Evans of the university.

**Medical Association to Meet.**—The Central Oklahoma Medical Association, which was announced to meet in Chickasha in June last, will hold its meeting in that place October 4, as the guest of the Grady County Medical Association.

**Personal.**—Dr. Joseph Hensley, Oklahoma City, has resigned as a member of the State Board of Medical Examiners.——Dr. Franklin P. Davis, Enid, secretary of the State Medical Board, has been elected superintendent of the State School for Feeble-Minded, Enid.

## OREGON

**Raise Money for Hospital.**—The first two days in September $5,000 was subscribed toward the hospital which the Sisters of Providence are planning to erect in Medford at a cost of $100,000.

**State Association Meeting.**—The thirty-sixth annual meeting of the Oregon State Medical Association was held in Portland September 7-9. The following officers were elected: President, F. W. Vandyke, Grant's Pass; vice-presidents, Drs. Robert C. Yenney, Portland; Samuel T. Linklater, Hillsboro, and Robert E. Ringo, Pendleton; secretary, Dr. Calvin S. White, Portland; treasurer, Dr. Edna D. Timms, Portland (re-elected), and councilors, Drs. William House and Noble W. Jones, Portland. The Baker County Medical Association was granted a charter by the association.

## PENNSYLVANIA

**Physicians of Three Counties Meet.**—At the annual meeting of physicians of Dauphin, Lebanon and Lancaster counties, held at Pequa, August 25, the following officers were elected: President, Dr. Warren F. Klein; vice-president, Dr. William M. Guilford, and secretary, Dr. William R. Roedel, all of Lebanon. Lebanon was decided on as the place of meeting for 1911.

**Individual Drinking Cups Used.**—State Health Commissioner Dixon made public, September 14, the report given him by the Pennsylvania Railroad of the results of the campaign against the common drinking cup. In the Harrisburg Station alone, during the month of August, 3,700 individual drinking cups were used and at Lancaster, 1,540. The figures for other stations were: Parkersburg 200; Coatesville, 300; Downington, 195; Wayne, 579; Bryn Mawr, 643; Ardmore, 286, and Columbia 559.

**Personal.**—Dr. Herbert S. VanKirk, McKeesport, sustained injuries to the foot by contact with the propeller shaft of a gasoline launch in which he was riding.——Dr. Edward R. Plank, Carlisle, has been reelected a member of the local board of health.——Dr. Elmer P. Norris, Newcastle, has been appointed surgeon of the Pennsylvania Brigade, Uniform Rank, K. of P.——Dr. John W. Luther, chief surgeon of the Palmerton Hospital, underwent operation for appendicitis at the University of Pennsylvania Hospital, September 8.

### Philadelphia

**Personal.**—Dr. Donnel Hughes returned from Europe September 13.——Dr. Charles H. Gardner has been elected surgeon-general of the Union Veterans' Legion.

**Hospital Society Elects.**—At the June meeting of the Woman's Hospital Medical Society, the following officers were chosen to serve for the ensuing year: President, Dr. Mary Getty; vice-president, Dr. Annie L. Connor; secretary, Dr. Margaret A. Warlaw, and treasurer, Dr. Mary T. Miller.

**Fire in Tuberculosis Institute.**—A fire which originated on the fourth floor of Henry Phipps Institute, August 29, did little damage but caused great excitement. Twenty-five patients were quickly removed from the building, which was saved by the speedy action of a volunteer fire brigade of physicians and nurses.

**Asks Money for Home for Feeble-Minded.**—A message has been sent to City Councils by Mayor Reyburn asking that body to appropriate $150,000 for the purchase of 120 acres of woodland as a site for the erection of a home for the indigent and feeble-minded children. This land is on the Delaware River, immediately north of the Torresdale filtration plant.

**English Ophthalmologist in Philadelphia.**—Dr. Sydney Stephenson, the noted English ophthalmologist, was the guest of honor at a number of entertainments while in this city. On September 13, Dr. Wendell Reber gave a luncheon; on September 14, Dr. W. Campbell Posey gave a luncheon at the University Club and in the evening he was the guest of honor at a dinner given by Drs. L. Webster Fox and S. Lewis Ziegler at the Union League Club.

**New Factors in Tuberculosis Fight.**—The dedication exercises of the new home of the Jewish Consumptive Institute at Fourth and Water streets, began September 11, and continued throughout the week. The building is equipped with a dispensary for clinical service, a laboratory for microscopic research, and has a staff of physicians, and also one of nurses for visiting patients at their homes.——The Philadelphia Jewish Sanatorium for Consumptives has completed plans for a children's pavilion soon to be erected at the farm in Eaglesville.

**Opening of University.**—The annual opening exercises of the University of Pennsylvania were held September 23. A new department of tropical medicine has been inaugurated. Among the new members of the faculty of the medical school are, Dr. R. M. Pearce, professor of pathology and research medicine; Dr. A. E. Taylor, professor of physiologic chemistry; Dr. A. N. Richards, professor of pharmacology, and Dr. David L. Edsall, professor of medicine; Dr. Allen J. Smith, formerly professor of pathology, becomes professor of tropical medicine and comparative pathology, with Dr. Damaso Rivas as assistant; Dr. James H. Austin has been appointed demonstrator of pathology and Dr. A. B. Eisenbrey, assistant in research medicine. Dr. Louis A. Durhing, who has held the chair of dermatology for many years and a professorship since 1876, has resigned.

**The Tyson Portrait for the College of Physicians.**—The committee of arrangements for the dinner given to Dr. James Tyson on May 5 finds, after the payment of all bills, that it

has a surplus that has been increased by an unsolicited and generous donation from one of Dr. Tyson's friends, who is not a physician. It desires to add to this surplus a sum sufficient to enable it to employ a competent artist to paint a portrait of Dr. Tyson to be presented to the College of Physicians, of which he is an ex-president, as a further and enduring evidence of the esteem in which he is held by the medical profession. In order to accomplish this, the committee invites contributions from all fellows of the college and especially from those who, from various causes, were unable to subscribe to the dinner. Checks should be drawn to the order of Dr. W. C. Posey, treasurer, and forwarded to him at 2049 Chestnut street.

## SOUTH DAKOTA

**Change in Medical Board.**—Dr. Frank S. Howe, Deadwood, has been appointed a member of the State Board of Medical Examiners to fill the vacancy caused by the resignation of Dr. Hiram E. McNutt, Aberdeen.

**State Association to Meet.**—The twenty-ninth annual session of the South Dakota State Medical Association will be held in Hot Springs, September 27-29. On the evening of the second day, the members of the society will be guests of Dr. Miller, governor of the Battle Mountain National Sanatorium.

**Contracts for Sanatorium Building Let.**—The contract has been let to a Rapid City firm of contractors for the following buildings for the South Dakota State Sanatorium for Tuberculosis, Custer: Pavilion for patients, cottage for dining room and kitchen, and superintendent's residence. The house which is already on the site is to be used for quarters for the help. It is expected that the buildings will be completed by December 1, and that patients will be admitted a month later.

## TENNESSEE

**Eastern Tennessee Physicians to Meet.**—The annual meeting of the East Tennessee Medical Society will be held in Bristol, September 29 and 30.

**Personal.**—Dr. and Mrs. Edwin G. Wood, Nashville, have sailed for Europe, and on their return expect to locate in Toronto, Ont.——Dr. Isaac N. Frost, Memphis, has been appointed local medical examiner for the Panama Canal Commission.

**College Opens.**—The sixtieth annual session of the Medical Department of the University of Nashville and the University of Tennessee opened September 5. Dr. Robert O. Tucker, dean of the faculty, presided, and in his opening address mentioned that a laboratory of pharmacology had been equipped and placed in charge of Dr. Joseph P. Keller and that new equipment to the value of several thousand dollars had been purchased.

## TEXAS

**State Health Officers' Conference.**—The State Health Board announces that the annual meeting of health officers of the state will be held in Houston, September 25-27.

**Medical College Opening.**—The Medical Department, University of Texas, Galveston, will be opened for its fall term, October 1. Dr. George F. Gracey has succeeded Dr. Arthur E. Austin as professor of chemistry, and Dr. George H. Lee has succeeded Dr. John F. Y. Paine as professor of obstetrics.

**Personal.**—Dr. Lane B. Kline has been appointed medical missionary to the Philippine Islands under the Foreign Missionary Society of the Christian church.——Dr. Otto Ehlinger, LaGrange, has been elected surgeon to the Agricultural and Mechanical College of Texas, College Station, vice Dr. Joseph R. Lay, resigned.——Dr. Rupes F. Minnock, city physician of Waco, has been appointed chairman of the city health department.——Dr. Frederick J. Combe has been appointed district surgeon for the St. Louis, Brownsville and Mexico Railway, vice Dr. Harry K. Loew, resigned, with headquarters at Brownsville.——Dr. A. Philo Howard, Houston, has been appointed surgeon for the Frisco lines east of Houston.

## UTAH

**State Association to Meet.**—The annual meeting of the Utah State Medical Association will be held in Salt Lake City, October 3 and 4, under the presidency of Dr. Joseph S. Richards.

**Personal.**—Dr. Patrick S. Keogh of the Keogh-Hammond Hospital, Salt Lake City, who was seriously injured, September 5, is reported to be recovering.——Dr. Frederick Clift, for more than five years assistant physician at the State Mental Hospital, Provo, has resigned, and will assume a similar position in the Kaysville Hospital. Dr. Clift has also resigned as secretary-treasurer of the Utah County Medical Society, and has been succeeded by Dr. Horace G. Merrill.

**School Medical Staff Appointed.**—The Board of Education of Salt Lake City has nominated the following staff for inspection of children in the public schools: Chief of staff, Dr. Eugene W. Whitney; secretary, Dr. Theodore B. Beatty, secretary of the State Board of Health, and Drs. Samuel G. Paul, city physician, Samuel H. Allen, Stephen L. Richards, Clarence Snow, Jane W. Skolfield, Charles F. Wilcox, Charles I. Douglas, Parley P. Musser, Harry N. Mayo, Luella P. Miles and John F. Critchlow.

## VIRGINIA

**Medical College Opens.**—The Medical College of Virginia opened for its annual session, September 11, with an address of welcome by Dr. Christopher Tompkins.

**Personal.**—Dr. Sparrell S. Gale, Roanoke, has gone to attend clinics at Rochester, Minn.——Dr. Powhatan S. Schenck has succeeded Dr. Harry R. Dupuy as health commissioner of Norfolk.——Dr. F. L. Banks, Madison county, one of the assistant physicians of the Central State Hospital, Petersburg, has resigned, and has been succeeded by Dr. B. L. Carleton of Essex county.

## GENERAL NEWS

**Coming Meetings.**—The Southern Medical Association will hold its annual meeting in Nashville, November 8-10.——The Medical Association of the Southwest will hold its annual meeting in Wichita, Kan., October 11 and 12.——The American Association for the Study and Prevention of Infant Mortality will hold its annual meeting in Baltimore, November 9-11.

**Meeting of French-Speaking Physicians.**—At the fourth annual meeting of the Association of French-Speaking Physicians of North America, held in Sherbrooke, Quebec, August 24 and 25, the following officers were elected: Honorary presidents, Drs. J. J. Guerin, and A. Achille Foucher, Montreal; president, Dr. Henri Hervieux, Montreal; vice-presidents, Drs. J. M. Arthur Rousseau, Quebec; Joseph O. Ledoux, Sherbrooke; and Joseph C. H. Gauthier, St. Ephrem d'Upton; secretary, Dr. Joseph Gagnon, Montreal, and treasurer, Dr. Benjamin G. Bourgeois, Montreal.

**Mississippi Valley Meeting.**—At the thirty-sixth annual meeting of the Mississippi Valley Medical Association, held in Detroit, September 13 to 15, the following officers were elected: President, Dr. Robert H. Babcock, Chicago; vice-presidents, Drs. Arthur D. Holmes, Detroit, and Charles E. Barnett, Fort Wayne, Ind.; secretary, Dr. Henry Enos Tuley, Louisville (reelected); and treasurer, Dr. S. C. Stanton, Chicago (reelected). The selection of a place of meeting and of the chairman of the committee of arrangements for 1911 was left to the Executive Committee with power to act.

**Electro-Therapeutists Meet.**—The twentieth annual meeting of the American Electro-Therapeutic Association was held in Saratoga Springs, N. Y., September 13-15, and the following officers were elected: President, Dr. Frederick DeKraft, New York City; vice-presidents, Drs. F. Howard Humphris, London, England, and Frank B. Granger, Boston; secretary, Dr. J. Willard Travell, New York City (re-elected); treasurer, Dr. Emil Henel, New York City; registrar, Dr. Frederick M. Law, New York City (reelected); and trustees, Drs. Charles R. Dickson, Toronto, Ont., and Thomas D. Crothers, Hartford, Conn.

**Death Rate for 1909.**—The death rate in the registration area of the United States for 1909, is lower than that for any previous year; the U. S. Census bulletin on mortality statistics gives the death rate, based on the provisionally estimated population for that year, as 15 per thousand, as against 15.4 for 1908. The bulletin states that it is evident that an era of low mortality has begun and cites the fact that the death rate in England and Wales for the same year was 14.5 and for London was 14. This latter fact demonstrates the fallacy of the idea that high death rates are necessarily found in large cities. The largest number of deaths returned for any month of 1909 was 70,093 for March, and the month having fewest deaths was June. The registration area comprised 55.3 per cent of the estimated population for that year.

**Health of the Philippine Islands.**—In the report of the Bureau of Health of the Philippine Islands for the quarter ended March 31, Dr. Victor G. Heiser, the director, notes a decrease of 1,025 Americans, 539 Spaniards, 333 other Europeans, and 3,935 Chinese between 1907 and 1910, and an increase

of 16,567 Philippinos and 132 of other nationalities, making a net increase of 10,867.——At the first biennial meeting of the Far-Eastern Association of Tropical Medicine, held in Manila, March 5 to 12 and in Baguio, March 13 and 14, work of especial value was reported in beriberi by Fraser, of the Straits Settlements and Aron, of the Philippine Medical School, showing that an outbreak of the disease in most cases is caused by the continued consumption of polished rice and that the disease is probably due to the deprivation of phosphorus which is polished away during the milling process. It is hoped that by prohibiting the use of polished rice in public institutions, the disease may be eradicated from such places. ——Dr. Heiser also notes that the experiments with cancer vaccine made by Dr. Coca and P. K. Gilman, met with excellent preliminary results.——A description of the means by which the leprosy organism may be grown outside of the human body was presented and a paper was also presented by Dr. Strong on his experiences with the Ehrlich method of using arsenophenylglycin for the treatment of surra in horses. ——There were reported 578 cases of cholera in the islands. In 1909 there were 2,221 and in 1908, 806 cases. More than 2,500,000 doses of quinin have been purchased and arrangements have been made for gratuitous distribution of the medicine in the malarious sections of the islands.——The outdoor treatment of tuberculosis in the mountains of Benguet has been commenced and a number of patients are now under treatment and making encouraging progress.——The tuberculosis camp at San Juan, near Manila, is being transformed into a suitable sanitary site and soon will be ready to receive patients.

## MANILA LETTER

*(From Our Regular Correspondent)*

MANILA, August 9, 1910.

### Prevention of Tuberculosis in the Philippines

Another step forward is to be noted in the progress of preventive medicine in the Philippines. This is expressed in the organization of the National Society for the Study and Prevention of Tuberculosis in the Philippine Islands. In many respects one feels agreeably surprised to find that in this comparatively new country (that is from an American point of view), medicine and the medical sciences are so much to the front and are of such a high standard. From the central government's having a more direct control of sanitation and quarantine than is the case in America, and from the fact that good health is so extremely important and desirable in the tropics, this condition of affairs is in a measure to be expected among the Americans and Europeans. But in spite of this the popular support given to medical problems in general by the Americans and a great number of the Filipinos, and the good spirit in which these are received by the masses of the people, are rather gratifying. Many measures are more easily put into practice in the Philippine Islands than in America. The new National Society for the Study and Prevention of Tuberculosis in the Philippine Islands was organized and had its first meeting in the assembly room of the insular capitol building. It was presided over by the governor-general, and the U. S. Secretary of War, Hon. Jacob M. Dickinson, delivered an address. The organization is about equally well represented by Americans and Filipinos and many of the latter are on important committees. The first main object of the association is one of education and the protection of the people from the infectious cases.

The association starts its work under the most auspicious circumstances. It has the undivided support of the government, the medical profession, the laity, the church (both Protestant and Catholic) and the press. It was brought out at the first meeting that tuberculosis is general throughout the Philippines, that about 20 per cent. of the people of the islands are infected in one form or another, and that the annual financial loss due directly to tuberculosis is from $20,000,000 to $60,000,000. The annual death-rate in Manila from tuberculosis is from 5 to 6 per 1,000. In a country whose climate is never severe, where there is little abject poverty and plenty of fresh air this condition of affairs is hardly to be expected. Moreover, the houses are built so that they can be thrown wide open to both sun and air. But the filthy condition in which the people live, the low standard of living, with often insufficient food, and the decided overcrowding in the homes are taken to be the principal factors in the prevalence and spread of tuberculosis. It is even said that the condition in which the inhabitants sleep is directly responsible for the major part of the tuberculosis. From 6 to 20 people usually eat, live and sleep in 1 or 2 small rooms. At night the house is closed up as tight as it is possible to close a nipa house. All windows, doors and cracks are closed and a little kerosene lamp is kept burning all night to keep out the night air and to drive away the evil spirits. When there are one or two individuals with advanced tuberculosis sleeping among the others and spitting promiscuously about the place it is easy to see how the disease is spread. This overcrowding and the superstition which usually accompanies it promise to be the most difficult obstacles in the fight against tuberculosis.

Among the factors which are calculated not only to improve the general health of the people of the islands but also to aid materially in their education is to be mentioned and particularly emphasized, the work being accomplished by the Bureau of Public Works. This bureau is building good roads throughout the islands, trying to establish a sanitary water supply for every community and is draining many cholera-laden rice marshes and establishing sanitary irrigation. The attempt to give every barrio pure water is meeting with great success and widespread commendation. Unfortunately the capacity of the bureau in this regard is by no means as great as desirable. In the municipalities and larger towns of the provinces public artesian wells are being dug just as fast as possible. In the smaller towns deep wells enclosed and covered over with concrete encasements and fitted with pumps are being installed. These are usually near the center of the town and near the American schoolhouse. It is useless to add that the health conditions in these communities almost immediately improve. In those regions where cholera is endemic wells are especially urged. In some of these remote districts it almost seems like a liberal education when the native has learned to use and appreciate pure drinking water. To these cholera endemic regions the attention of the Bureau of Public Works has recently been directed. It is proposed to establish a system of irrigation to supplant the present system of stagnant irrigation, and to have it so arranged that the rice fields may be flooded and drained at will, either by a high tide in those districts along the coast, or in the hills from a river or reservoir.

Such is another phase of the American campaign of sanitation and irrigation in the Philippine Islands.

## LONDON LETTER

*(From Our Regular Correspondent)*

LONDON, September 10, 1910.

### A Nurse's Mistake: The Danger of the Similarity of the Dram and the Ounce Symbols

It is curious that the danger of the similarity of the dram and the ounce symbols of pharmacy has not received more attention and that cases of poisoning from confounding them are not recorded. Probably the great difference in dose prevents a mistake on the part of the pharmacist, however bad the writing in a prescription. But in the case of nurses, or other persons ignorant of pharmacy, who may have to administer medicine, there is no such safeguard. The reality of the danger is shown by the following case. A woman, aged 45, was admitted into St. Thomas' Hospital suffering from exophthalmic goiter and advanced pulmonary tuberculosis. Her nurse was responsible for giving a sleeping draught of liquor morphinæ hydrochloridi which was prescribed on the bed-card. The solution was kept in a poison chest in the ward, which was lighted by electricity when the nurse poured out the dose into a graduated measure. The amount ordered was a dram, but the nurse mistook the symbol for ounce and administered that dose. After five minutes she discovered her mistake and called the house physician. He could find no signs of morphin poisoning then or up to the time of the patient's death, and at the inquest he stated that the patient might have died at any time from disease. He did not think that the morphin accelerated death. The nurse said that the symbols for dram and ounce were very similar and that nurses were not trained as to the fatal doses of poisons; they had to find out for themselves. The coroner commented on the danger of having a number of closely-written lines containing the names of several poisons on a bed-card and on the danger of permitting nurses to measure poisons. The jury found that the woman died from the effects of disease accelerated by the shock following the treatment made necessary by the nurse's mistake, and recommended that directions for administering medicine should be written in plain English instead of "hieroglyphics."

### Mortality Due to Wild Animals in India

The "Statistical Abstract" relating to British India, which has just been published, shows a decline in the deaths due to wild animals. Whereas in 1899 these amounted to 27,585,

in 1908 they had fallen to 21,904. Of these deaths the snake is responsible for the overwhelming majority—24,619 in 1899 and 19,738 in 1908. There are curious fluctuations in the man-eating propensities of the tiger. In 1908 he killed 1,908 persons; in 1906, 690, and in 1901, 1,171. The killing of cattle by wild animals is a fairly constant factor—98,687 in 1899 and 98,307 in 1908. In these figures the leopard is an easy first and the tiger a good second. These animals alone ate over 71,000 cattle while wolves accounted for another 10,000. On the other side of the account there is the satisfactory total of 17,296 wild animals and 70,494 snakes killed in 1908.

## PARIS LETTER

(*From Our Regular Correspondent*)

PARIS, Sept. 9, 1910.

### Liquor Dealers Protest Against Temperance Agitation

A committee representing the organized restaurant and saloon keepers has recently presented a protest to the government against the "campaign being waged in the name of hygiene by the temperance societies." This protest against the antialcohol crusade is eloquent testimony to the disregard for public health interests on the part of the liquor dealers and should suffice to discredit certain other demands they are making at this time.

### Proposed Changes in the Outlay for Public Charities

Since 1905, when the law went into effect which provided for old age pensions, it has been felt more and more that it would be better policy to do more for the welfare of the children who are some day to become the vital force of the nation. At present the city of Paris, for example, expends yearly scarcely two million dollars for all its maternities, children's hospitals and asylums, milk stations, day nurseries, fresh-air schools, etc. On the other hand, for the aged and the insane it expends over ten millions. This lack of proportion between the provisions for the rising and the declining generations is particularly shocking on account of the prevailing low birth-rate, which renders it peculiarly imperative to save as many as possible of the children that are born and to reduce the number of stillbirths by proper care of pregnant women. These ideas have inspired M. A. Rendu, a member of the city council and at one time president of the board in charge of the public charities, the *Assistance Publique*, to propose in the council a measure designed to divert more of the funds to the care of young girls, mothers, infants and children, instead of devoting them so predominantly to the care of the aged and the insane. His plan does not contemplate depriving the aged and the insane of their support, but it proposes to board them out in rural districts. All the aged who were not born in Paris and have not founded a family there would be removed to their native province and supported there either in local asylums or with relatives, their pension of 30 francs ($6) a month to be forwarded regularly to them. This would relieve the Paris asylums where most are now housed and where it costs for each over $160 a year; only those too infirm to be moved or without any relatives would be retained there. The same plan could be followed with the insane, whose support in the Paris asylums costs over $200 a year apiece. Rendu believes that large sums would thus be saved; this amount would then be available for increasing the number and scope of the institutions and agencies for aiding pregnant women and mothers, infants and older children; that is, the elements on which the future of the race depends and which at present rank second or third in the outlay for public charities.

### Contract Practice in France

The lodges and sick benefit societies have multiplied so rapidly in France that now they list about five million members. Unfortunately this development has taken place in large part at the expense of the medical profession. The lodges assume the expense of medical attendance for their members and contract with certain physicians at a very low rate. Many young doctors just entering on practice contract with the societies in this way, hoping that the number of patients will make up for the smallness of the individual fees. Some physicians are even complaisant enough to accept the deplorable system of contracting to attend the members for a certain lump sum, determined in advance, representing a certain small sum per member per year. The result of this contract work is that physicians may receive $480 a year and have to make 4,000 calls for this, which is only a little over ten cents a visit. This situation is particularly distressing at present, when physicians in various parts of the country, and especially at Paris, are striving to raise their fees. The lodges and benefit societies are also beginning to see the folly of attempting to estimate in advance the demands that will be made on the lodge doctor, and the members are beginning to realize that at a ten-cent rate the physician may be inclined to neglect them for his more remunerative patients. The French law compels the societies of this kind to keep a certain proportion of their funds in reserve so that they are unable to dispose of them at will, but the members' fees might be raised a little, enough to do some justice to their medical attendants. Another point on which the profession and the lodges are disputing is that the members should not be restricted in their choice of a physician but should be entitled to call on any medical man; this "free choice" would distribute the work more evenly among the local physicians while guaranteeing better their absolute independence. The lodges state that they cannot permit this free choice without a certain guarantee and right of control to eliminate abuses. A solution of the difficulty has been proposed by M. Emile Loubet, the former president of France, who is much interested in the development of the mutual aid societies; he proposes the organization of boards of arbitration at Paris and in the various provinces to settle all disputes that may arise in the course of contract practice. Conditions at present are threatening the welfare both of the physicians and of the societies.

## BERLIN LETTER

(*From Our Regular Correspondent*)

BERLIN, Sept. 2, 1910.

### Marriage Statistics of the German Empire

If the marriageable age for males is placed at 21 as the lower limit and 70 as the upper, there were on December 1, 1900, when the last official census was taken 14,045,033 males of marriageable age. Of these 4,044,206 were single, 9,456,241 married, 544,586 widowed or separated. There were therefore at that time in Germany 4,588,792 marriageable males. In the course of ten years from 1899 to 1908, 4,803,399 marriages were celebrated, 480,400 males, on the average being married yearly, i. e., 1,047 for every 10,000 marriageable men.

If we place the begining of marriageable age for women at the end of the fourteenth year and the upper limit at 70, there were on December 1, 1900, in Germany 18,540,081 female persons of marriageable age; of these 7,105,906 were single, 9,622,246 married, 1,811,929 widowed or separated. There were therefore in Germany 8,917,835 marriageable women. In the decennium from 1899 to 1908, 480,400 women on the average married yearly, or 539 for every 10,000 marriageable women. In 1899 the number of marriages in the German empire was 471,519. The number of marriages sank in 1902 to 457,208, and has risen from that time to 1907. Last year it amounted to 503,964. In the last five years ending in 1905 the number of marriages had risen 10.3 per cent. while the population and probably also the number of marriageable persons had risen in the same time only 7.6 per cent. In 1908 the figure had again sunk to 500,620.

### Tuberculosis in Bavaria

At one of the latest sessions of the Munich medical society, Professor Dieudonné announced that the mortality from tuberculosis in Bavaria had materially improved. In general the mortality of infectious diseases in Bavaria has markedly diminished in the last few years, from 77.7 per cent. in the year 1877 to 38.4 per cent. for the year 1905, or reckoned for 10,000 inhabitants, from 270 to 187. But the records show that among the religious sisterhoods (*die barmherzigen Schwestern*), who are mostly engaged in nursing, 1,360 or 56.2 per cent. died of tuberculosis in the years from 1899 to 1908. As to the methods of infection by tuberculosis, a number of cases have been observed in Bavaria in which children lived for a long time exclusively on raw milk from cows with tuberculosis of the udder without becoming sick. In one case the calf of a cow with diseased udder perished from bovine tuberculosis (*Perlsucht*) while two persons who drank the same milk at the same time remained healthy. As to the question of inhalation and intestinal tuberculosis, the result of experiments has shown that a primary tuberculosis from feeding may be brought about, but that a much larger number of bacilli are necessary than in the case of infection by inhalation. The number of bacilli necessary to produce disease by inhalation and by feeding stand in the relation of 62 to 6,000,000. The bovine type was never found in the sputum of adults.

## Marriages

DAVID I. MACHT, M.D., to Miss Sarah Adler, both of Baltimore, September 5.

JOHN CHARLES FALK, M.D., to Miss Ida Curtman, both of St. Louis, September 8.

THOMAS P. LYNAM, M.D., to Miss Mary Ellen Boyle, both of Chicago, September 14.

FREMONT C. KNIGHT, M.D., Waukegan, Ill., to Miss Iva M. Fischer of Chicago, September 6.

JOHN E. MCARDLE, M.D., to Miss Henrietta Grimme, both of Fort Wayne, Ind., September 6 .

RANULPH HUDSTON, M.D., to Miss Ethel Jean Simpson, both of Denver, Colo., September 7.

CLYDE WHITNEY DICK, M.D., Wilcoe, W. Va., to Miss Mattie Ellen Selfe of Tazewell, Va., July 14.

ANGELO JOHN SMITH, M.D., to Miss Lucy Stuart Bradley, both of Yonkers, N. Y., September 8.

WILLIAM H. THEARLE, M.D., U. S. Army, to Miss Bertha Mills of Waynesboro, Pa., September 5.

WILLIAM J. WILLS, M.D., Sedalia, Mo., to Miss Lulu E. Nichols of Springfield, Mo., September 1.

GEORGE WILLIAM MILLER, M.D., Norristown, Pa., to Miss Mary E. Platt of Philadelphia, September 10.

JULIUS HENRY POWERS, M.D., Saginaw, Mich., to Miss Lenore M. Beattie of Ionia, Mich., September 5.

IRA NORMAN GATES, M.D., Panama, Canal Zone, to Miss Bessie Annis of Kennewick, Wash., August 30.

GEORGE BRUCE LEMMON, M.D., Springfield, Mo., to Miss Mary Eugenia Harrell of Pasadena, Cal., September 8.

JACOB WHEELER BIRD, M.D., Sandy Springs, Md., to Miss Mary McIntire Wilson of Centreville, Md., September 7.

CLINTON KITTO SMITH, M.D., Alamosa, Colo., to Miss Jane Esther Thayer of Evanston, Ill., in St. Louis, September 7.

## Deaths

**Edward Ely Van De Warker, M.D.** Albany (N. Y.) Medical College, 1863; chairman of the section on obstetrics and diseases of women of the American Medical Association in 1887; formerly assistant surgeon and surgeon of the One Hundred and Sixty-second New York Volunteer Infantry; surgeon in chief of the Third Brigade First Division Nineteenth Army Corps; medical director of the First Provisional Division of Georgia, and chief medical officer of the District of the Ocmulgee during the Civil War; formerly president of the Onondaga County Medical Society, Central New York Medical Society, Syracuse Medical Society, and Syracuse Academy of Medicine; a member of the American Gynecological Association; surgeon to the Central New York Hospital; senior surgeon to the Woman's and Children's Hospital, and consulting surgeon to St. Anne's Maternity Hospital; formerly school commissioner; died at his home in Syracuse, September 6, aged 68.

**Marcus Rosenwasser, M.D.** University of Würzburg, Germany, 1867; a member of the American Medical Association; formerly professor of diseases of women in Wooster University Medical College, and afterwards at the College of Physicians and Surgeons, Cleveland; once vice-president of the American Association of Obstetricians and Gynecologists; gynecologist to the Cleveland General and Mount Sinai hospitals; consulting gynecologist to the City Hospital, and physician to the Jewish Orphan Asylum; during 1901 and 1902, president of the local board of health; died at his home in Cleveland, September 4, from angina pectoris, aged 64. At the funeral services, held September 6, Drs. George W. Crile, John H. Lowman, Charles F. Hoover, and Charles B. Parker, former colleagues of Dr. Rossenwasser, acted as honorary pallbearers.

**Simeon Starkweather French, M.D.** Geneva (N. Y.) Medical College, 1842; for many years a member of the American Medical Association; formerly president of the Michigan State Medical Society, Calhoun County Medical Society, Battle Creek Academy of Medicine, and Kalamazoo Academy of Medicine; for three years surgeon of volunteers during the Civil War; local surgeon of the Grand Trunk Railroad for eighteen years; for twelve years health officer; two terms mayor, one term alderman, two years superintendent of schools, eight years inspector of schools, and four years supervisor of Battle Creek, Mich.; who is said to have presented the resolutions which resulted in the "Under the Oaks" meeting at the organization of the Republican party; died at his home in Battle Creek, September 10, aged 94.

**Sidney L. Theard, M.D.** Tulane University, New Orleans, 1891; a member of the American Medical Association; in 1898 appointed sanitary officer of the State Board of Health, and a few months later made secretary, sanitary officer and treasurer of the New Orleans City Board of Health, holding these offices up to the time of his death; died at his home September 5, from paralysis, aged 42. The funeral was attended by more than fifty members of the parish medical society, and the mortuary committee of that association acted as honorary pallbearers.

**James Donnelly, M.D.** University of Michigan, Ann Arbor, 1883; a member of the American Medical Association; associate professor of surgery in and dean of Toledo Medical College; local surgeon in Toledo for the Lake Shore and Michigan Southern Railway, and the city fire department; a member of the school board for several terms; United States pension examiner for the district; died in St. Vincent's Hospital, Toledo, September 4, from typhoid fever, aged 53.

**Adam B. Dundor, M.D.** Jefferson Medical College, 1864; a member of the American Medical Association, and American Academy of Medicine; for about twenty-five years a member of the board of health of Reading, Pa., and president of the board for nine years; one of the founders and a member of the staff of the dispensary and Reading Hospital for nearly a quarter of a century; died at his home in Reading, September 3, from paralysis, aged 72.

**Emory M. Lyon, M.D.** University of Vermont, Burlington, 1862; a member of the Medical Society of the State of New York, and formerly president, secretary, and treasurer of the Clinton County Medical Society; health officer of Plattsburg, a member of the pension board for eighteen years, and surgeon for the Home for the Friendless; a veteran of the Civil War; died at his home in Plattsburg, September 7, aged 74.

**Stephen Albert Russell, M.D.** University of Buffalo (N. Y.) 1871; a member of the American Medical Association; city physician and health officer and alderman of Fulton, N. Y.; attending physician to the City Hospital, and consulting physician to the Oswego County Hospital; local surgeon for the New York, Ontario and Western Railroad; died at the Lee Memorial Hospital, Fulton, September 5, from cerebral edema, aged 60.

**John Troutman, M.D.** Missouri Medical College, St. Louis, 1877; of Kansas City, Kan.; a member of the American Medical Association, and American Electrotherapeutic Association; a member of the medical staff of Bethany Hospital, Kansas City, Kan.; professor of electrotherapeutics in the Kansas State University; died at his old home in Wooster, Ohio, September 4, after a surgical operation, aged 65.

**Francis Hart Stuart, M.D.** Long Island College Hospital, Brooklyn, 1873; a member of the American Medical Association and American Academy of Medicine; formerly president of the Brooklyn Pathological Society; obstetrician to the Brooklyn Hospital; died at his home in that city, September 4, from heart disease, aged 64.

**J. A. Gray, M.D.** Toronto School of Medicine, 1872; for many years coroner for the county of Peterboro, Ont., and local surgeon for the Canadian Pacific Railway at Peterboro; fell from a window of his house, June 14, and sustained injuries from which he died in the Nicholls Hospital, June 14.

**Joseph Orpheus Lieuellen, M.D.** Starling Medical College, Columbus, Ohio, 1898; a member of the American Medical Association; died at his home in Maineville, Ohio, September 5, from the effects of a gunshot wound of the head, self-inflicted it is believed while despondent on account of illness, aged 36.

**William Henry Path Evatt, L.R.C.S.,** Ireland, 1879; of Chicago; a member of the Illinois State Medical Society; while walking on the tracks of the Metropolitan Elevated Railroad, September 12, was struck by a train and received injuries from which he died a few hours later, aged 55.

**Sturley C. Fetzer, M.D.** Western Pennsylvania Medical College, Pittsburg, 1904; of Sheridan, Pa.; a member of the Chartiers Valley Medical Society; died in the Allegheny General Hospital, September 3, from appendicitis for which four operations had been performed, aged 28.

**Louis Edmonds, M.D.** Harvard Medical School, 1893; of Boston; a member of the American Medical Association; superintendent of Penikese Hospital for Lepers for more than

two years; died in the City Hospital, Boston, September 1, from cancer of the stomach, aged 64.

**John Conway Rogers, M.D.** Harvard Medical School, 1864; vice-president of the Washington County (Maine) Medical Association; assistant surgeon in the army for one year during the Civil War; died at his home in Pembroke, August 22, from heart disease, aged 75.

**William Robert Wall,** (license, Iowa, 1886); a member of the Iowa State Medical Society; a veteran of the Mexican and Civil wars; for more than forty years a practitioner of Hentonville, Iowa; died suddenly at his home, September 4, from heart disease, aged 88.

**Emil Wahl, M.D.** University of Leipsic, Germany, 1884; a member of the American Medical Association; one of the best known practitioners of Milwaukee; accidentally shot and killed himself in a boat while hunting at Muskego Lake, September, 9, aged 48.

**Lydia Sayre Hasbrouck, M.D.** New York Hygieo-Therapeutic College, New York City; for nearly half a century a practitioner; a lecturer and pioneer in the dress-reform movement; died at her home in Middletown, N. Y., August 27, aged 83.

**John W. Dashiell, M.D.** University of Maryland, Baltimore, 1843; one of the oldest and most widely known practitioners of Somerset county, Md.; for several years town commissioner of Princess Anne; died at his home in that town, September 4, aged 93.

**John Edmond Faber, M.D.** Washington University, St. Louis; 1869; a member of the Missouri State Medical Association; while working in the laboratory of his son in St. Louis, September 5, died suddenly from cerebral hemorrhage, aged 78.

**Stuart Arthur Ashton, M.D.** University College of Medicine, Richmond, Va., 1907; of Colonial Beach, Va.; a member of the Medical Society of Virginia; died in Garfield Hospital, Washington, September 9, from anterior poliomyelitis, aged 25.

**James Henry McInerny, M.D.** Yale University, New Haven, 1891 of New York City; assistant surgeon of the New York General Memorial Hospital; died at his summer home in Mount Vernon, September 5, from heart disease, aged 50.

**Nathaniel T. Dulaney, M.D.** Jefferson Medical College, 1856; formerly president of the Tennessee State Medical Association; and for six years a member of the state legislature; died at his home in Bristol, September 3, aged 76.

**Morris Clifford Hutton, M.D.** University of Kansas, Kansas City, 1906; of Kansas City, Kan.; physician to the Swift Packing Company; died from gangrene at the Bell Memorial Hospital, Rosedale, Kan., August 31, aged 26.

**John P. Malcolm** (license, Delaware); for thirty-five years a practitioner of Wilmington; at one time coroner's physician and for several terms city vaccine physician; died at his home, September 7, from paralysis, aged 61.

**William Howell Drake, M.D.** Victoria College, Coburg, Ont., 1857; a member of the College of Physicians and Surgeons of Ontario; died at his home in Windsor, September 6, from arteriosclerosis, aged 78.

**James A. Atkisson, M.D.** University of Nashville, 1880; a member of the American Medical Association; local surgeon at Morehouse, Mo., for the Frisco System; died at his home, September 1, aged 54.

**William M. Yater, M.D.** Tulane University, New Orleans, 1885; a member of the State Medical Association of Texas; died suddenly at his home in Cleburne, September 9, from heart disease, aged 47.

**Homer K. Castle, M.D.** Eclectic Medical University, Kansas City Mo., 1903; a practitioner for twelve years; died at his home in Kansas City, September 5, from heart disease, aged 61.

**Sarah Elizabeth Wilder, M.D.** Boston University School of Medicine, 1879; of Dorchester, Boston; died recently at her summer home in Agawam, Mass., from cerebral hemorrhage, aged 74.

**Edward D. Yeates, M.D.** Tulane University, New Orleans, 1870; of Starkville, Miss.; a Confederate veteran; died at the home of his son in Grenada, Miss., September 1, aged 65.

**Ferdinand A. Steffen, M.D.** University of Greifswald, Germany, 1882; died at his home in College Point, Long Island, N. Y., September 9, from cerebral hemorrhage, aged 56.

**William Thomas Evans, M.D.** Tulane University, New Orleans, 1871; a member of the State Medical Association of Texas; died at his home in Jewett, May 28, aged 69.

# *Pharmacology*

## STRYCHNIN ARSENATE REFUSED RECOGNITION

### Report of the Council on Pharmacy and Chemistry

The Council, after considering the advisability of admitting to New and Nonofficial Remedies the unofficial, non-proprietary preparation, strychnin arsenate, decided not to admit it, and authorized publication of the following report.

W. A. PUCKNER, Secretary.

Strychnin arsenate is a compound of the alkaloid strychnin with arsenic acid, containing between 68 and 70 per cent. of anhydrous strychnin. It is a white, crystalline powder of small, colorless or faintly yellowish, transparent or slightly opaque prisms, or in white acicular crystals, odorless but extremely bitter. It is slowly soluble in about 20 parts of water at 25 C., more readily soluble in hot water, slightly soluble in alcohol, insoluble in chloroform or ether.

After considering the properties of this substance the Council voted not to accept it for N. N. R., as there is no sufficient reason for combining two powerful remedies in such form. As a chemical combination there appears to be no objection to it, as the compound is sufficiently definite, but the readiness with which the salt separates into its constituents, strychnin and arsenic acid, indicates that it can present no advantages over a mixture of its components so far as pharmacologic action and therapeutic use are concerned. On the other hand, it is both unscientific and irrational to prescribe two such energetic remedies having quite different indications under such a fixed form that the efficient dose of one may involve an unsuitable and perhaps dangerous dose of the other.

If a dose of strychnin arsenate equivalent to 0.002 gm. (1/32 grain) of strychnin sulphate is given, the patient would receive about 0.00063 gm. (1/100 grain) of arsenic acid, which is about one-fifth the official dose. On the other hand, strychnin arsenate cannot be used to bring out the therapeutic effects of arsenic in cases in which it is necessary to push the latter remedy, because this would necessitate the giving of dangerous doses of strychnin. A much more appropriate and scientific procedure would be to prescribe the medicines separately or in an extemporaneous pill or solution in which the proportions of the two ingredients could be changed from time to time according to the varying indications in the particular case.

## FRUITOLA

### Olive Oil and Seidlitz Powders as a Fake Gallstone Cure

The quack and the exploiter of "patent medicines" revel in the spectacular; any unusual property possessed by a drug, whether as a physical characteristic or in pharmacologic action, is quickly utilized by the nostrum vender for his financial profit.

For years an enterprising faker who advertised a "cure" for Bright's disease sent out small vials—free—containing a weak solution of silver nitrate. The victim was instructed to make a "uranalysis" by adding the contents of the vial to a small quantity of his urine. "If a white precipitate follows," wrote the quack, "you have Bright's disease!" As the chlorids naturally present in every urine caused a precipitate the layman was duly impressed with his dangerous (?) condition and bought the "cure."

Another bright mind took advantage of the physical properties of an acidulated solution of quinin sulphate. This solution, as all physicians know, has a very decided fluorescence, and the somewhat uncommon appearance was ascribed by the medical faker to radium. This "radium solution" was sold at an outrageously high price as a "sure cure" for cancer.

For many years the kidney disease "curer" has taken advantage of the power of methylene blue to color the urine of the person taking it, and no doubt thousands of laymen ignorant

of this property have been frightened by its use into believing that the integrity of their kidneys was seriously impaired.

Of more recent origin is what may be called the "fake gallstone trick" which is now being industriously worked in many parts of the country. Originally operated by traveling fakers, it has lately been adapted to the exigencies of the "patent medicine" industry. The principle on which this fake depends is the well-known fact that giving a patient massive doses of some bland oil will result in the passing of soapy concretions. These lumps, greenish in color and of varying sizes, are easily mistaken by the layman for "gallstones."

There are several modifications of this "gallstone cure" fake, but the most widely advertised is that sold by the Pinus Medicine Company of Los Angeles under the name "Fruitola." It is usually exploited in connection with another nostrum—"Traxo"—put out by the same concern. Many physicians have written to THE JOURNAL, telling the experiences of some of their patients who had taken "Fruitola" for the "removal of gallstones." The following from Dr. James C. Gill of Chicago is typical:

"I am sending an advertisement of a 'patent medicine' called 'Fruitola,' which has been extensively advertised for some time. The fraudulent character is so evident that it is a great imposition on the public to allow such a fraud to be perpetrated. I am also sending what they claim to be able to rid the system of, namely, 'gallstones' (?).

"One of my patients, a young woman, took the contents of this bottle, as well as the powders which accompany the liquid as part of the treatment. Several hours after taking the medicine there were several painful evacuations, in which there appeared a large number, probably two dozen or more, small greenish masses about the size of an ordinary garden pea. The young woman was very much frightened, thinking that they were really gallstones and that she was in a serious condition."

Of course the "gallstones" were simply soapy concretions that usually follow the administration of massive doses of oil.

"Fruitola" consists of an 8-ounce bottle of oil and six powders, four of the latter being in blue papers and two in white. The following directions are given on the bottle:

"At 3 o'clock in the afternoon, dissolve the contents of two blue papers in a half glass of water, add the contents of one white paper and drink. At bed-time squeeze a little lemon juice into a glass, pour in the contents of the bottle, squeeze a little lemon on top and drink at once. Keep a little lemon near in case it shows a tendency to rise.

"As early as possible in the morning take the rest of the powders. When the medicine operates use a vessel partly filled with water, pour in more water or stir the contents, and the gallstones will float on top in the shape of dark green lumps, varying in size from a pin head to a hickory nut, in bad cases even larger."

Photographic reproduction of label from a bottle of "Fruitola."

To determine the character of the oil and the composition of the powders an analysis of "Fruitola" was made in the Association laboratory. The chemists' report follows:

### LABORATORY REPORT

An original package of "Fruitola" purchased on the open market was submitted to the Association laboratory for examination. The accompanying labels [One of these labels is reproduced on this page.—ED.] appeared on the carton and bottle.

Other labels describing the use of the preparation were also on the bottle. The carton contained besides the bottle, two sets of powders, one set wrapped in white, and the other in blue paper.

The bottle contained a transparent amber-colored oil, having an odor of anise and a bland taste. From its physical properties and chemical composition[1] it was concluded that the substance was olive oil, flavored with a trace of anise.

The powder in the white papers was subjected to chemical tests,[2] and found to be tartaric acid. The identity of the constituents and their quantitative[3] estimation indicated that the powder in the blue papers was a mixture of approximately one part sodium bicarbonate and two parts Rochelle salts—sodium potassium tartrate.

From the foregoing it is concluded that the liquid portion of "Fruitola" is olive oil flavored with anise while the powders accompanying the liquid are the well-known seidlitz powders.

### CONCLUSION

Here, then, we have the fake in a nutshell: Olive oil and seidlitz powders. That this combination will produce a good imitation of what the average man imagines to be gallstones is undoubtedly a fact. A thorough cleansing of the intestinal tract by means of laxatives not too drastic in action will produce a temporary feeling of well-being in a person who is chronically constipated, and this fact alone should make it easy for the exploiters of "Fruitola" to get all the "testimonials" they want.

That persons should be mulcted of a dollar, however, for the privilege of having their bowels moved and being made into a peripatetic soap factory may seem humorous—but it is an outrage nevertheless. To such as wish to make the experiment—and it is one that is by no means free from danger in all cases—we would suggest the following procedure as equally efficacious and much less expensive: Buy 20 cents' worth of olive oil and a nickel's worth of seidlitz powders. You then have all the paraphernalia necessary for the production of home-made gallstones. All that is required is to take the oil and powders and then practice watchful expectancy. The expected will happen.

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1. The oil was insoluble in alcohol but soluble in chloroform. The saponification number of the oil was found to be 190.6. This with the other properties of the oil indicated that it was olive or cotton-seed oil. Identity tests were made indicating the absence of cotton-seed oil and suggesting olive oil. As a further check the iodin absorption number was measured and found to be practically that of olive oil.

2. The contents of the powders in the white papers weighed 4 gm. each. The substance was white in color, odorless, with an acid taste and readily soluble in water. Ignition caused decomposition and combustion of the powder and an odor of burnt sugar. The aqueous solution of the powder was acid in reaction and appeared to be free from metallic elements. These properties suggested some solid organic acid. This substance responded to identity tests for tartaric acid. As a verification, quantitative estimations were made and the substance found to be tartaric acid.

3. The contents of the powders in the blue papers weighed 8 gm. each. The substance was found to be a white, odorless powder, soluble in water and having at first a cooling and then a bitter-salty taste. The aqueous solution of the powder effervesced on the addition of acid. Qualitative tests indicated the presence of sodium, potassium, carbonate and tartrate. The presence of other metals or acid radicles could not be demonstrated. The tests indicated the powder to be a mixture of a bicarbonate, probably sodium bicarbonate, and a tartrate, probably sodium potassium tartrate. Titration of the aqueous solution of this powder required an amount of standard acid equivalent to approximately 33 per cent. sodium bicarbonate. To check this estimation and also to determine whether or not the other constituents were present in the proportions to form sodium potassium tartrate, the substance was converted to carbonate by charring, the char leached, and the aqueous solution titrated with standard acid. The quantity of standard acid required in the direct titration was subtracted from the total acid used, leaving the quantity of acid required to neutralize the carbonates formed by charring. The acid thus required for the carbonate corresponded to approximately 66 per cent. sodium potassium tartrate. Showing the powders in the blue papers to be a mixture of one part sodium bicarbonate and two parts sodium potassium tartrate.

### ODOL

A correspondent asks for the formula of "Odol," a somewhat expensive English toothwash. It is advertised to an enormous extent in Great Britain, but has not as yet been given any great degree of publicity in this country. It has been claimed that the preparation is a by-product of the salol factories, though this has been denied. Formulas representing the results of various analyses have appeared in German pharmaceutical journals, and the following, by Aufrecht, is from Hager's *Handbuch der Pharmaceutischen Praxis*, Ergänzungsband, Ed. 1908.

| | |
|---|---|
| Alcohol | 89.00 per cent. |
| Water | 8.00 per cent. |
| Menthol | 2.00 per cent. |
| Saccharin | 0.05 per cent. |
| Peppermint oil | 0.05 per cent. |
| Clove oil | 0.10 per cent. |
| Salol-like substance | 0.05 per cent. |

## Correspondence

### Hexamethylenamin in Poliomyelitis

*To the Editor:*—The article in THE JOURNAL, September 17, has crystallized my intention to send you a suggestion in regard to the treatment of the epidemic anterior poliomyelitis. There can no longer be any question as to the nature of this disease, undoubtedly an infection localizing in the spinal canal. The well established fact that hexamethylenamin is excreted or secreted in the cerebrospinal fluid suggests its possible use in this disease.

Within the past few weeks I have seen two instances of this disease, shortly after the onset of paralytic phenomena and have given large doses of urotropin (hexamethylenamin). In neither instance did the paralysis extend and both patients made good recoveries.

It is superfluous to say that nothing can be concluded from such an experience, but in view of our desperate helplessness in such cases, a drug, backed as hexamethylenamin is by some experimental work, may be tried.

ROBERT B. PREBLE, Chicago.

### Medical Bibliography

*To the Editor:*—Medical bibliography is a subject of which the average practitioner knows little, and cares less. Yet with the constantly increasing mass of medical literature, and the growing army of investigators, some familiarity with what is being done in medical science is highly desirable to every intelligent member of the profession, and indispensable to any one who is attempting to do original work. The lack of this knowledge has often led to much that is both laughable and tragic in the breathless announcement, by men whose enthusiasm has outrun their learning, of facts already old and well known.

We must first of all realize that the living, growing body of medical science is in its periodical literature, and that text-books are only imperfect abstracts or summaries made for convenience, by which some acquaintance with certain facts is made possible for those to whom the more extended sources of information are inaccessible, or to whom more detailed knowledge is unnecessary. Medical literature at large, that is, in what may be called its raw state, contains a large mass of very diverse material; some of it no more than a gathering together of common-places; some of it a valuable generalization from known facts, and some of it, first-hand additions to scientific knowledge. A reference is usually made for the purpose of giving the authority for some statement, or a series of references, forming a "bibliography," for the purpose of giving the sources from which the present state of knowledge about a given subject has been derived. The proper work of the bibliographer is to digest the raw material of medical literature and to eliminate that which is irrelevant and useless, so that in the end, his "bibliography" may be complete in all essential particulars, carrying no waste matter to confuse future students and squander their time.

In order that this may be done most effectively, and with the utmost economy in labor and time both to the bibliographer and student, certain conventions as to the form and arrangement of references should be adopted. It would be well if we could all agree that all references appearing in medical literature should be made to conform to the type or form adopted by the *Index Medicus* (e. g., Doe. (J.). The functions of lymphoid structures, Amer. Jour. Physiol., 1909, xx, 617.) Where the author has examined the original of the references, this would always be possible, and it would materially facilitate their use. Second-hand references, those which a writer incorporates in a bibliography on the authority of some other person, knowing nothing personally of their content or accuracy, should be marked in some distinguishing fashion.

I have before me a reprint, just received, from a young and brilliant colleague, containing the account of some interesting original researches. A bibliography is appended, containing about 500 references. Of these, not one gives the title of the paper referred to; many give no page numbers; many give no year of publication, and many others fail to give the volume. The verification of such a bibliography, even if one were in the Surgeon-General's Library, would be an interminable labor. On the whole, it looks more like a purely ornamental addendum to the simple account of some scientific investigations, than like anything of real assistance to future students.

If our medical colleges could add to their courses a few lectures on the use of medical literature, or a definite course in bibliographic research, it would be not only of immense value but of fascinating interest to all so fortunate as to participate. We should soon have a class of medical graduates whose horizon would not be limited by the text-books they used in college and what their professor said.

And, finally, medical editors have at their command the most powerful means of improving the whole situation, not only by the publication of "Indexes," as some now do, nor by abstracts of current medical literature, which is most useful, but by educating their contributors and readers in addition, to that accuracy and uniformity in bibliographic matters which would eventually be helpful to us all.

HAROLD WILSON, Detroit.

[COMMENT:—The failure of authors to give complete bibliographic references, accurately and uniformly, constitutes one of the trials of the editor. THE JOURNAL has prepared a pamphlet[1] on "Bibliographic Style" to which all references in THE JOURNAL and in *The Archives* are made to conform. Authors generally fail to follow any consistent system in preparing their references to other articles. In some cases, doubtless, it is too much to expect that they shall provide every detail. It is a far different matter, however, for an author to have his stenographer copy on his manuscript a lot of references that he finds tacked on some other article on the same subject. Often this seems to have been done without verification, without completion, without any reason apparent save the desire to have a bibliography with the article. Some one has said that this ought to be made gross unprofessional conduct—a sentiment with which many will sympathize who have tried to make use of such an abomination.—ED.]

**Maritime Quarantine.**—In Bulletin 34 of the Public Health and Marine-Hospital Service the facts of maritime quarantine practice are arranged in a compact and interesting form. The boarding, inspection and judgment of vessels, quarantine treatment, station management, descriptions of stations, duties of officers, disinfection and disinfectants, apparatus, etc., are all concisely described and freely illustrated with halftones. It contains valuable information not only for the maritime quarantine service, but for sanitarians and health officers generally.

1. Sent on receipt of 10 cents in stamps.

# Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## ARGYLL ROBERTSON—A BIOGRAPHIC NOTE

*To the Editor*:—Please give a brief account of Argyll Robertson.
B.

ANSWER.—Douglas Argyll Robertson was born at Edinburgh in 1837, his father being a distinguished surgeon. He received his medical training in Edinburgh and St. Andrews, from which latter university he graduated in 1857. He then studied ophthalmology in Prague under Arlt, and in Berlin under Graefe. He took the fellowship of the Edinburgh College of Surgeons in 1862. In 1867 he was appointed assistant ophthalmic surgeon to the Royal Infirmary; in 1870 he was made co-equal with his senior colleague, Mr. William Walter, and in 1882 had for a time sole charge of the ophthalmic department. He continued to hold the senior post until his hospital retirement in 1897, when he was appointed consulting ophthalmic surgeon. Dr. Robertson was president of the Royal College of Surgeons in 1886; in 1893 and 1894 he was president of the Ophthalmological Society of the United Kingdom. In the latter year he was also president of the International Congress of Ophthalmology which met at Edinburgh. He was surgeon oculist in ordinary in Scotland to Queen Victoria and to King Edward. In 1896 the university of Edinburgh conferred on him the degree of LL.D. Robertson's contributions to ophthalmology were many, and several were of the first importance. In 1863 appeared his paper on the Calabar bean, and in 1869 and 1870 his papers on spinal myosis, in which he described that condition of the pupil which has since been known by his name. He was a first-class operator and an excellent teacher. He was also a good shot, but golf was his chief recreation. In 1904 Dr. Robertson gave up practice and returned to his seat, "Mon Plaisir," in Jersey, dying Jan. 3, 1909, at Gondal, India, while on a visit to the Thakur of Gondal. (*Ophthalmic Review*, February, 1909, p. 39, with portrait. See also abstract in the "Ophthalmic Year-Book," Vol. VII, 1910.)

## STAINS DESCRIBED BY GIEMSA AND LEVADITI

*To the Editor*:—Please give me the formula and the technic for Giemsa's stain and for Levaditi's stain.
LYNN M. BARNES, M.D., Decatur, Ill.

ANSWER.—1. The formula of the Giemsa stain is as follows:

| | |
|---|---|
| Azur II eosin | 3 gm. |
| Azur III | 0.8 gm. |
| Glycerin | 250 c.c. |
| Methyl alcohol | 250 c.c. |

Smears from chancres, etc., are fixed for ten minutes in absolute alcohol. The preparations are then stained in a dilute solution of the Giemsa stain (made by adding one drop of Giemsa stain to 1 c.c. of distilled water, and rendering alkaline with a few drops of 1 per cent. solution of potassium carbonate) for from two to twenty-four hours or in the undiluted stain for from one-half to six hours. Afterward they are washed in distilled water, dried and mounted.

2. Levaditi's method may be employed for sections: (1) Fix pieces of tissue about 1 mm. thick in 4 per cent. formaldehyd solution, 1 part of liquor formaldehyd to 9 parts water, for twenty-four hours. (2) Wash in water and harden in 96 per cent. alcohol for twenty-four hours. (3) Wash in water for some minutes (until pieces sink). (4) Place in 3 per cent. silver nitrate solution at 37 C. for from three to five days in the dark. (5) Wash in distilled water for some minutes, and then place in the following solution at room temperature for from twenty-four to forty-eight hours:

| | |
|---|---|
| Pyrogallol | 2 to 4 gm. |
| Formaldehyd solution | 5 c.c. |
| Distilled water | 100 c.c. |

(6) Wash in distilled water, dehydrate in absolute alcohol, clear in xylol, embed in paraffin, cut, and mount.

## PAINLESS INSERTION OF HYPODERMIC NEEDLE—ORIGIN OF TERM "STONE BLIND"

*To the Editor*:—If the skin of the arm, etc., be carefully inspected, especially after lightly brushing it with the palm of the hand, a minutely mottled pink and white coloration will be noted. The nerve supply of the body is everywhere closely related to the blood-vessels, even to capillary distribution, hence the white blotches are poorest in nerve tissue and therefore least susceptible to pain. If these white areas be the points of choice and the needle be applied perpendicularly to the surface of the skin little or no pain will be experienced.

Referring to the note at the foot of page 848 of THE JOURNAL, September 3, anent the origin of the popular term "stone blind," should we not look to a popular source for the explanation of such terms rather than to the medical literature? The lay mind knows little or nothing of glaucoma, but has always been familiar with the eyes of marble statuary that see not, and the sculptured ears of stone that hear not, and the unfeeling rocks in general. Should we not therefore look to this fact for the origin of such terms as "stony-hearted," "stone deaf" and "stone blind" rather than to the far-fetched suggestion in the footnote referred to?
E. B. KNEBB, M.D., Kansas City, Mo.

# The Public Service

## Medical Department, U. S. Army

Changes for the week ended Sept. 17, 1910.

Tenney, Elmer S., M. R. C., September 9, granted leave of absence for twenty days, terminated not later than Nov. 3, 1910.

Marietta, Shelley U., M. R. C., September 9, relieved from duty at Camp of Instruction, Fort Benjamin Harrison, Ind., about Sept. 15, 1910, and will return to his proper station, Fort Des Moines, Iowa.

Bierbower, Henry C., M. R. C., September 9, ordered to proceed to Fort Benjamin Harrison, Ind., for duty with the Sixth Cavalry, at Camp of Instruction.

Schreiner, E. R., major, September 9, on the abandonment of Fort Walla Walla, Wash., will proceed to Boise Barracks, Idaho, for duty at that station.

Usher, F. M. C., major, September 9, granted leave of absence for one month.

McCown, Thomas B., M. R. C., September 11, left Fort Barrancas, en route to Fort Dade, Fla., on temporary duty.

Bundesen, H. N., M. R. C., September 11, left Fort D. A. Russell, Wyo., on fifteen days' leave of absence.

Sherwood, John W., M. R. C., September 12, granted twenty days' leave of absence.

Knox, Howard H., lieut., September 12, granted 10 days' leave of absence.

Walkup, Joseph O., M. R. C., September 10, granted fifteen days' leave of absence.

Jackson, T. W., M. R. C., September 13, left Fort Hunt, Va., on ten days' leave of absence.

Cullen, Charles W., M. R. C., September 13, ordered to Fort D. A. Russell, Wyo., and granted two months' leave to take effect on arrival at station.

Bartlett, William K., capt., September 12, granted five days' leave of absence.

## Medical Corps, U. S. Navy

Changes during the week ended Sept. 17, 1910.

Longabaugh, R. I., P. A. surgeon, commissioned passed assistant surgeon from May 4, 1910.

Donelson, M., P. A. surgeon, detached from the naval hospital, naval home, Philadelphia, and ordered to duty at the naval hospital, Newport, R. I.

Reed, E. U., P. A. surgeon, detached from the *Philadelphia* and ordered to the *Princeton*.

Miller, J. T., P. A. surgeon, commissioned passed assistant surgeon from June 27, 1910.

Casto, D. H., asst.-surgeon, detached from the *Princeton* and ordered to the *Philadelphia*.

Hermesch, P. A. surgeon, commissioned passed assistant surgeon from July 12, 1910.

McDowell, R. W., asst.-surgeon, discharged from treatment at the naval hospital, Norfolk, Va., and ordered to the Naval Medical School Hospital, Washington, D. C., for treatment.

## U. S. Public Health and Marine-Hospital Service

Changes for the seven days ended Sept. 14, 1910.

McIntosh, W. P., surgeon, detailed as member of a Revenue-Cutter Service Retiring Board, Baltimore, Sept. 15, 1910.

Wertenbaker, C. P., surgeon, granted 1 month's leave of absence from Sept. 12, 1910.

Robinson, D. E., P. A. surgeon, granted 1 months' leave of absence from Sept. 8, 1910.

Gwyn, M. K., P. A. surgeon, detailed as member of a Revenue-Cutter Service Retiring Board, Baltimore, Sept. 15, 1910.

Pettyjohn, Joseph, P. A. surgeon, granted 1 month's leave of absence from Sept. 15, 1910, on account of sickness.

Warner, H. J., asst.-surgeon, granted 7 days' leave of absence from Sept. 17, 1910.

Preble, Paul, asst.-surgeon, granted 10 days' leave of absence from Sept. 8, 1910.

Grimm, R. M., asst.-surgeon, leave of absence for 4 days from Sept. 1, 1910, amended to read 4 days from Sept. 13, 1910.

Thompson, Lewis R., asst.-surgeon, directed to proceed to Chicago, and report to the Medical Officer in command for duty and assignment to quarters.

Bingham, E. O., acting asst.-surgeon, granted 15 days' leave of absence from Aug. 16, 1910, on account of sickness.

Horning, Henry, acting asst.-surgeon, granted 7 days' leave of absence from Sept. 6, 1910, under paragraph 210, Service Regulations.

Hume, Lea, acting asst.-surgeon, granted 5 days' leave of absence from Aug. 1, 1910.

Mason, William C., acting asst.-surgeon, granted 7 days' leave of absence from Sept. 18, 1910.

Sinclair, A. N., acting asst.-surgeon, granted 4 days' leave of absence from August 23, 1910, under Paragraph 210, Service Regulations.

Wallace, C. R., acting asst.-surgeon, granted 19 days' extension of leave from Aug. 3, 1910, on account of sickness.

Walkley, W. S., acting asst.-surgeon, granted 3 days' leave of absence from Sept. 16, 1910

Dr. Lewis R. Thompson commissioned (recess) an assistant surgeon in the Public Health and Marine-Hospital Service, Sept. 6, 1910.

Board of medical officers convened to meet at the marine-hospital, San Francisco, Sept. 21, 1910, for the purpose of making physical examinations of officers of the Revenue Cutter Service. Detail for the board: Passed Assistant Surgeon R. E. Ebersole, chairman; Assistant Surgeon R. A. Kearney, recorder.

Board of medical officers convened to meet at the marine-hospital, Baltimore, Sept. 21, 1910, for the purpose of making physical examinations of officers of the Revenue Cutter Service. Detail for the board: Surgeon W. P. McIntosh, chairman; Passed Assistant Surgeon M. K. Gwyn, recorder.

# Society Proceedings

## COMING MEETINGS

Amer. Roentgen Ray Association, Detroit, September 28—October 1.
American Association of Railway Surgeons, Chicago, October 19-21.
Idaho State Medical Association, Boise, October 6-7.
Indiana State Medical Association, Fort Wayne, September 29-30.
Kentucky State Medical Association, Lexington, September 27-29.
Medical Association of the Southwest, Wichita, Kan., October 11-12.
Michigan State Medical Society, Bay City, September 28-29.
Minnesota State Medical Association, Minneapolis, October 6-7.
New Mexico Medical Society, Albuquerque, September 29—October 1.
Pennsylvania, Medical Society of State of, Pittsburg, October 3-6.
Utah State Medical Association, Salt Lake City, October 3-4.
Vermont State Medical Society, St. Albans, October 13-14.
Virginia, Medical Society of, Norfolk, October 25-28.
West Virginia State Medical Assn., Parkersburg, Oct. 5-7.
Wyoming State Medical Society, Casper, September 27.

## MISSISSIPPI VALLEY MEDICAL ASSOCIATION

*Thirty-Sixth Annual Meeting, Held at Detroit, Sept. 13-15, 1910*

The President, DR. FRANK P. NORBURY, Hospital, Ill., in the Chair

### Pain in Abdominal Diseases

DR. WILLIAM M. HARSHA, Chicago: In order to interpret pain properly, a careful history is necessary as pain must be considered in relation to other factors in a given case, and without these it loses its chief importance. The relation of pain to taking food is also of great value, particularly in duodenal or gastric ulcer or the various stenoses, benign or malignant. The direction and extent of painful radiations and the association with hyperesthesia, local tenderness, and muscular rigidity are of great importance as indications of the site and gravity of the lesion. The arm pain in angina pectoris, the shoulder or upward radiation in gall-bladder disease and downward, forward, and testicular pain in nephritic colic are well-known examples. The pain of abdominal disease may be either spontaneous or elicited by pressure, body movement or position, and it may be influenced by psychical, thermic, mechanical or chemical means, all of which may be utilized in cases to aid in exact diagnosis. Diseased viscera cause pain at or near their various sites, but there are many exceptions which lend importance to the reflex or referred pains. A number of abdominal diseases, especially of the more acute variety, are first heralded by pain rather than by change of size, position, or other physical conditions. The surgeon can often gage the urgency in a given case by the character and severity of pain. Taking cognizance of the value of pain associated with local distentions and peristalsis, or the absence of peristalsis, we may locate stenosis or other forms of obstruction, calling to our aid submerged palpation, or palpation in the bath, which will enable us to detect induration which is otherwise not palpable. By observing the time-relation of pain to other symptoms, the effect of food, drugs, cathartics, cold,. fatigue, movement, position, jarring, fist percussion, anesthetics or electric stimulation, we should be able to increase the percentage of correct diagnoses.

The safety of abdominal section may have caused us to relax our efforts at exact diagnosis. It has frequently happened that laparotomy has been done for appendicitis when a movable kidney, pyelonephritis, ureteral stone, typhoid, diaphragmatic pleurisy, salpingitis, or some other condition is present. Age, sex, occupation, or previous history may give valuable aid. In childhood intestinal troubles prevail, and we are likely to encounter appendicitis, intussusception, or tuberculosis, and in advanced age malignant disease. In women, the pelvic organs are frequent sites of disease, while gall-stones are frequent. Lead colic may simulate organic disease. A history of indigestion, with vague epigastric pain, may aid in determining a perforation of the duodenum or stomach, and a record of previous inflammatory trouble in the abdomen may explain a sudden intestinal obstruction. Among the less frequent conditions may be mentioned the meteorism with abdominal pain, resulting from the embarassed portal circulation in cardiac insufficiency. I have recently seen a case of this kind in which the pain was so pronounced and distentions so great that abdominal tumor was suspected by one physician. We should consider the possibility of disease of the central nervous system, such as tabes, herpes, or hysteria, disease of the spine, as caries, or spondylitis deformans. We should also consider the possibility of disease of the thorax, referring pain and rigidity to the abdomen; or to one kidney referring the pain from stone to the kidney of the opposite side. Excluding pain from the cord, spine or reflex causes, we should remember that diseased viscera may be at the normal site, displaced especially by prolapse, or transposed. On the surgeon falls the burden of responsibility for exact diagnosis, as his operative experience should add to his knowledge.

#### DISCUSSION

DR. WILLIAM FULLER, Chicago: The man who can best interpret the significance of pain is the one who has suffered some pain. While I do not think it necessary to have all the acute abdominal diseases in which there is great pain to make a diagnosis, I think a little knowledge gained in a practical way helps out very much. Dr. Harsha's paper contains two excellent points: First, is the emphasis that he lays on the fact that abdominal pains may be severe from trivial abdominal affections; second, is his statement that very serious abdominal affections may be unattended by pain.

DR. CHANNING W. BARRETT, Chicago: When a patient complains of pain generally over the abdomen from appendicitis or gall-bladder trouble, we find frequently by putting the finger on the point that is affected, or supposed to be affected, and making a little pressure that the surrounding pain disappears. We can then go over the rest of the abdomen, and while the patient may complain of local pain, the rest of the pain is gone. An anesthetic is of great value sometimes in pelvic and abdominal cases, but I think we gain more knowledge of these conditions by examining the patient first without an anesthetic.

DR. L. W. BREMERMAN, Chicago: In diseases of the kidney or the ureter, I have seen cases in which there was hematuria, with marked pain over the region of the kidney, the kidney being felt on palpation, excessive tenderness over the kidney, a kidney lesion diagnosed, and surgical intervention recommended. On cystoscopic examination of the individual, I discovered that the hematuria was developing from the supposedly healthy kidney, the urine from the supposedly diseased kidney being normal. Every method of examination should be resorted to before an absolute diagnosis is made.

### The Cause and Significance of Tubal Rupture in Extrauterine Pregnancy

DR. CHANNING W. BARRETT, Chicago, read a paper on this subject in which he drew the following conclusions:

1. Pregnancy, which is considered to be always extrauterine in the beginning, assumes pathologic significance when it undergoes ectopic attachment.
2. The ovum attached in the tube has a parasitic action, having a malignant tendency in that it destroys maternal tissues, embeds itself in the tube wall and tends toward death of the mother, but in "making its bed digs its own grave."
3. The growth of the ovum or enlargement of dead ovum mass together with the destruction and thinning of the tube wall leads to almost certain rupture of the tube.
4. The primary rupture may be partial and even slight, or it may be complete and even fatal.

5. If incomplete, a subsequent rupture or ruptures are the rule.
6. With rupture there is free hemorrhage more or less severe, which is never to be looked on lightly and which may prove fatal.
7. The loss of blood may be through one rapid fatal hemorrhage or there may be a series of lesser hemorrhages.
8. If the patient does not succumb to loss of blood the presence of the blood and the ovum in the abdominal cavity act as irritating foreign substances leading to loss of function and pathologic changes in the viscera, and perhaps to local or general infection, thrombosis, embolism, etc.
9. The dead ovum is only slightly less harmful from the standpoint of infection.
10. A study of the pathology makes all treatment looking toward killing the ovum appear irrational.
11. Patients in good condition with or without ruptures are almost certain to have future trouble and should have an operation as soon as is consistent with good work.
12. Patients in bad condition with concealed hemorrhage from the cause in question have collapse in proportion to the amount of blood lost, and rational treatment must look with certainty toward the stopping of further hemorrhage.
13. An opening of the abdomen with clamping or ligating of the vessels is the only reliable means of controlling internal hemorrhage and if done rapidly and with care is little tax on the patient.
14. The clinical experience of the world and a study of the pathology of this condition points to the danger of delay.
15. The more desperate the case while the patient yet lives, the greater the call for immediate action.

DISCUSSION

DR. EDWIN WALKER, Evansville, Indiana: I know of one death from repeated hemorrhages, but most of the deaths have been in delayed cases in which sepsis has occurred after operation. The teaching that we should wait in these cases is not sound. I feel that the position taken by Robb is untenable. These patients who have been operated on promptly in my experience have recovered.

DR. JOSEPH RILUS EASTMAN, Indianapolis: This is 1910, and it is a pity that it is necessary for Dr. Barrett to present a paper like the one he has read. The teaching that it is wise to allow a woman to bleed into her own abdomen, or into her tube or uterus, while the surgeon stands by with his arms folded and falls back on soft pillows or relies on Providence, is absolutely pernicious. If a vessel were bleeding on the surface of her body, what man would be so negligent or so indolent as to stand by and allow the patient to bleed to death?

DR. CHARLES STOLTZ, South Bend, Ind.: I think that the more energy we expend in teaching that these conditions are to be met and not dallied with the better. The men who have received the proper teaching will recognize these conditions, and they will usually find some one who is competent to meet the conditions speedily, or they may be competent to operate themselves, because if there is any delay, or if the patient is carried from one place to another, she may die. I would rather act on the theory that shock is hemorrhage, and hemorrhage is shock.

### Special Points in Advanced Extrauterine Pregnancy

DR. SHELBY C. CARSON, Greensboro, Ala.: Although my experience is *nil*, I venture the suggestion that the operation for advanced extrauterine pregnancy be done in two stages when necessary or advisable, at an interval of from 48 to 60 hours, according to the judgment of the operator. In the first place, let the abdomen be opened, the child delivered, and the ovarian and uterine arteries clamped by rubber covered forceps, if they can be approached. In the second stage, separate the sac, release the blood-vessels after ligating the anomalous one, and closing the abdomen. Sometimes hysterectomy is imperative. This differs from and apparently is superior to the old method of uniting the sac to the incision and waiting weeks for its separation, since by this method the danger from sepsis is eliminated.

DISCUSSION

DR. J. H. CARSTENS, Detroit: I had one patient who went to term, a general practitioner having made the diagnosis. I operated on her in two stages. The placenta seemed to be attached to the intestines and the rectum, and I did not have the courage to remove it. I thought the best thing would be to leave the placenta alone, and so I removed the fetus, separated the peritoneum with the sac, and drained. The woman was septic at the time of operation, and finally died from sepsis. The placenta did not separate. Little shreds came away through the abdominal incision.

DR. W. M. HARSHA, Chicago: I have never heard satisfactorily explained the cause of the intense pain that comes on in cases of tubal rupture. The extent of pain and the broad radiations of it are great in comparison to the very small area apparently involved. A woman with tubal rupture suffers pain from her chest to her thighs—sometimes, at least. The broad radiation with the intense character of the pain make it almost impossible to get from these patients a rational explanation or history. These are the cases in which I believe a good dose of morphin is indicated: First, it will abolish the cardinal or reflex pains to a certain degree and help to localize the trouble; second, it will limit the hemorrhage. Before administering morphin one should observe carefully the character of the pain, the extent of the radiations, the time, and the urgency of the condition. After recognizing these, morphin will answer two indications, namely, to relieve the shock and put the patient in a better condition for operation, and to some degree arrest the hemorrhage.

DR. CHANNING W. BARRETT, Chicago: In dealing with advanced extrauterine pregnancy we find that in the early months the ovum is not considered. The probabilities are that so far as the ovum is concerned it will die, and the chances are that it will kill the woman sooner or later. A few years ago, we would have said that at any time during the extrauterine pregnancy, early or late, the ovum should be removed at the earliest possible time. The teaching has been that if the ovum has passed the fifth month we should wait for viability. I would be inclined yet, even in spite of that teaching, to remove the ovum when found.

### Acetabular Fracture With Intrapelvic or Central Dislocation of the Femoral Head

DR. WILLIAM FULLER, Chicago: So close is the relation between fractures and the changes that take place in the bone, whatever they may be, that all such injuries resulting from trivial or slight degrees of violence, or possibly in unusual fractures with greater degrees of violence, should be regarded as possibly belonging to this class. Efforts have been made by several observers to put the etiology of fractures on a physical basis by studying the mechanical capabilities of bone. The great strength of the pelvic bones, their peculiar and powerful articulations and liberal muscular supply, are factors which singly and combined contribute much to the neutralization of all forms of direct violence exerted on this portion of the body. While Katz's theory of the mechanism of certain acetabular fractures will probably hold good, it is also worthy of mention that the experiments of Kusmin demonstrated that this fracture could or would not occur unless the force be applied with the femur in abduction. When the legs were kept parallel the acetabulum remained unfractured. From impacted fractures of the femoral neck central dislocation of the femoral head may be differentiated by the age of the patient and the comparatively high degree of injury in the latter instance. The remarkably sunken appearance of the greater trochanter and its slightly altered relation to Nélaton's line are points which distinguish the dislocation. The certainty with which the femoral head may be palpated in either of the anterior dislocations of the femur and its increase in length in the thyroid dislocation will serve to differentiate any one of these dislocations from a central one. In the dorsal dislocation, especially one above the obturator internus tendon, the trochanter is far above Nélaton's line, the thigh is adducted, flexed, and the axis of the dislocated femur crosses the lower end of the opposite one. Moreover, in the simple dislocation all movements will be less free than when the head and neck occupy a central position. I do not intend that the symptoms of acetabular fracture given here are to minimize in the least the importance of the radiograph, but that each and every manifestation of all hip injuries of whatever nature should be carefully and cautiously considered. In no instance should the clinical findings settle the diagnosis, as they are frequently misleading, and the conclusions based thereon

should invariably be corroborated by the roentgenologist. In case of failure to replace the head of the femur within the acetabulum, operation may offer the only hope of satisfactorily dealing with such a condition; but the particular type of operation and the advantages to be gained by it will depend much on factors opposing the reduction.

### Gastrostomy as a Curative Measure per se in Non-Malignant Strictures of the Esophagus

DR. JOSEPH RILUS EASTMAN, Indianapolis: The directly beneficial effects of gastrostomy in cases of so-called benign strictures of the esophagus are not generally appreciated. We have been too slow to break away from old notions, which were developed in the pre-aseptic era when the performance of gastrostomy was attended with considerable danger. Ewald, in discussing a report of successful dilatation of a diphtheritic stricture by Rosenheim, referred to a peculiar observation which he had made in dealing with such benign stenoses, namely, the remarkable circumstance that cicatricial strictures for which gastrostomy had been made nearly always improved steadily after the stomach fistula had been provided and food had been introduced through the fistula instead of through the gullet, that is, the stricture gradually developed a larger caliber without any other treatment whatsoever.

Ewald explained these phenomena in the following manner: After the gastrostomy is made it becomes possible to fill the stomach with food. The pull of the full stomach downward gradually stretches to some degree the elastic esophagus. When the stomach becomes empty the downward pull ceases, then the pressure of the food mass above the stricture has its effect on the stretch and more yielding strictured segment. More compact masses of food may then squeeze through. The explanation of the phenomena given by Ewald can hardly be applied to all cases. After the swallowing of a hot or caustic fluid, the mucosa of the gullet may become deformed in many ways. Among many interesting deforming processes are, for example, the complete tube cast-like separation of the mucous membrane described by Strauss, the esophagitis desssicans superficialis of Rosenberg, and esophagitis exfoliativa. In these conditions after the mucosa has become loosened from the underlying tissues and thrown into folds or ridges or pockets, it is easy to understand that the passage of food or of a bougie must be attended with great mechanical difficulty. It also seems fair to believe that the downward traction due to the filled stomach must have the effect in some instances of smoothing the valve-like folds and irregularities of the loosened membrane, thus permitting the passage of food through a previously impassable esophageal lumen. Gastrostomy is curative *per se* for another and more important reason. The rest afforded the esophagus is of the greatest value in allaying the inflammation which precedes or attends practically all benign strictures. If ulceration be present, the passage of food, or what is worse, the arrest of food, with consequent fermentation, must maintain or increase the activity.

### Fracture-Dislocation of the Atlas and Axis

DR. CARL E. BLACK, Jacksonville, Ill.: Called attention to the essential diagnostic points and gave reasons why operative interference has not been adopted more frequently. He summarized the treatment of such injuries as follows:

Immediate reduction may be done under an anesthetic. Walton has his patient sit in a chair while he turns the head still farther from the dislocated side. The head is then tilted to the sound side and extended while the column is rotated back into place. Hueter's method by rotation may be used. When the atlas is dislocated, before any method of reduction is undertaken, we should be sure that the odontoid process is not fractured. If the odontoid process is fractured, we are advised by some to place the patient in a plaster cast which will immobilize the seat of injury until healing can take place, and then reduce the deformity. The objections to this plan are that it fails to give the patient any opportunity for relief before degeneration of the cord can take place, and subjects him to further pressure from callus, and finally it will usually be found impossible to effect reduction after so long a time. Another plan is operative interference. While considerations of the cord are all important in such injuries, we should not be deterred from making every reasonable effort to restore the dislocated or fractured spinal vertebræ, because many questions regarding the degeneration and regeneration of the cord are in the stage of controversy and remain unsettled. It would seem to be our plain duty to effect a restoration of the bony column as far as it can be done without further endangering the cord, except in those cases in which the cord is hopelessly crushed beyond the possibility of the recovery of lost functions. The mechanical difficulties are great and often insurmountable, but perseverance with reasonable efforts to overcome them will certainly tell in time. It is a reasonable proposition that an injured cord has a better chance in a spinal canal with sufficient room than it has when held under even mild compression. From this reason, the second indication should usually be omitted and the injured parts exposed thoroughly. If the case is one of dislocation, efforts at reduction can be repeated under the direction of the eye and finger, and failing in this a laminectomy may be done.

### Preparation Required for the Practice of General Surgery

DR. G. W. GREEN, Chicago: The public has a right to demand of the surgeon (1) a good foundation in the shape of a diploma from a good school; (2) considerable time spent with a master of surgery, so that he has the following knowledge: (a) sufficient experience to make a correct diagnosis; (b) sufficient experience to know what is the best to do when the diagnosis is made; (c) that he shall know just how to do the work and have enough practice to have a definite surgical technic of his own, so that he is capable of performing the operation he essays, or any complication which might arise from that operation, in an average length of time; (d) that his mortality shall be as low, and his postoperative results as good, as those of the average surgeon. In return the surgeon has a right to expect fair remuneration and respect from the public, but no more than any other member with equal qualifications, specializing in any other branch of this, one of the noblest professions on the face of the earth.

### Tuberculosis of Bones and Joints

DR. EDWARD M. BROWN, Chicago: The treatment of tuberculous joint disease is (1) general or constitutional; (2) specific or serum treatment; (3) local. For practical purposes the local treatment may be divided into injection treatment, mechanical and operative. The advantages of operative treatment are: 1. The disease can at once be thoroughly eradicated, or nearly so that the patient easily overcomes the disease. 2. Dissemination of the disease is prevented. 3. The treatment is shortened. 4. The general condition of the patient rapidly improves. 5. The length of the limb and function of the joint are preserved to the best possible degree.

### The Responsibility of Physicians in the Traumatic Neuroses

DR. H. H. DRYSDALE, Cleveland, Ohio: In studying these conditions etiologically I have arrived at the conclusion that the true genesis, in a large majority of cases, is psychic, and that it is fright, fear of death, anticipated pain and anguish received unexpectedly by a totally unprepared sensorium which is the chief element to be considered. Psychologically, fright is a fundamental emotion. Violent in action, it will under certain conditions of mind pervert the sense faculty, disturb the kinesthetic equipoise and deform the physical and psychical personality. I consider the manifestations of these conditions to be the involuntary expression of a break in the bodily feeling. These by degrees tend to organize and combine to form a morbid mental state, a delusive conception, as it were, toward which every thought converges. A faulty environment frequently does more harm than the actual injury, as it tends to make the individual

introspective and depressed, and as a consequence he throws aside the normal weapons of defense and surrenders himself to the misfortune which has assailed him. From an experience of 108 cases investigated from the standpoint of the corporation as well as that of the patient, and which included in many instances the prelitigation, also the postlitigation period, I have made several observations which I believe, if put into practice, would place the responsibility of adjusting these trying conditions on a scientific basis, and thus obliterate much of the confusion and disquietude which surrounds the traumatic functional disorders of the nervous system.

### Hygroma of the Testicle

DR. CHARLES M. HARPSTER, Toledo, Ohio: A hygroma is essentially a serous cyst. The bacillus of tuberculosis is often found, and the hygroma, if a true one, always contains hard caseous masses and rice bodies. A true hygroma of the testicle and cord is rare. In the case of a man, aged 45, the patient suffered from a hydrocele for a number of years, and this was frequently tapped by his family physician. Some months ago it was tapped and considerable blood and some pus were withdrawn. This alarmed the patient, and in consultation with the attending physician I found the testicle considerably enlarged and very painful, with some slight general disturbance. The cord and testicle were removed. Tubercle bacilli were found in the rice bodies and tissue of the sac. Syphilis undoubtedly had been contracted, but was denied by the patient.

### The Tubercle Bacillus Cultivated from Cases of Primary Tuberculous Cervical Adenitis

DR. WILLIAM LITTERER, Nashville, Tenn.: Nine consecutive cases of primary tuberculous cervical adenitis were examined, which resulted in the isolation of five cultures of bacillus tuberculosis of the human type, and the four cultures of the bovine type. The classification of the types being made on the basis of four tests, to wit: First, the morphologic characters of the bacilli; second, the dysgenetic or eugenetic characters of the cultures; third, the relative virulence toward rabbits, and, fourth, the reaction curve in 5 per cent. glycerin bouillon. This latter test serves admirably to distinguish between the two types, provided repeated application and careful control over a period, in some instances, of 18 months. I have found that the differences in the growth of the two types dysgenetic and eugenetic on Dorcet's egg medium to be very valuable in differentiating the bovine from the human type of bacillus. Rabbit virulence has probably been more uniformly satisfactory than any of the tests in determining the differences between the two types of bacilli.

*(To be continued)*

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## AMERICAN PUBLIC HEALTH ASSOCIATION

*Thirty-Eighth Annual Meeting, Held at Milwaukee, Wisconsin, Sept. 6-9, 1610*

*(Concluded from page 1046)*

### SYMPOSIUM ON MENTAL CONDITIONS

### The Prevention of Mental Defects and Mental Diseases

DR. WILLIAM A. WHITE, Washington, D. C.: The practical things that may be done at once in any community are these: 1. Legislation should be secured placing the responsibility for the care of the insane previous to commitment in the local health office. 2. Every city of 100,000 inhabitants, or over, should have a psychopathic ward connected with its municipal hospital, which is as accessible for the mental case as the other wards are for general medical and surgical cases. This ward should have an out-patient department. 3. An after-care society should be organized to assist persons who have been discharged from a hospital for the insane to get on their feet and to point out to them ways of avoiding the conditions which led to their breakdown. 4. Adequate laws should be passed for the control of the labor of women and children. 5. There should be a campaign of popular education. By the use of this term I am not merely dealing in a glittering generality that may mean nothing or everything. We have in this country nearly 200 state hospitals for the care of the insane. Each of these hospitals should be a center of information for the community in which it exists, and its medical officers should use their positions to spread information about mental disorders. The superintendent, or a member of the staff, should deliver one or more popular lectures each winter to which the public should be invited. Much might be accomplished in this way if all hospitals would do this. 6. Field work should be carried on from the state hospitals and psychopathic wards as centers to study conditions under which insanity has developed, to furnish assistance to the hospital in dealing with its patients, and to cooperate with the after-care society. 7. More liberal support should be given by city and state for scientific research work in this field, especially along the lines of etiology and prophylaxis."

### Prevention of Feeblemindedness

DR. E. R. JOHNSTONE, Vineland, N. J.: Two or three states have passed laws authorizing the unsexing of degenerates after they get into institutions, but please note that these individuals must get in the institutions first. I heartily approve of the operation of castration and merely agree to vasectomy and salpingectomy. After these operations have been performed a fair percentage of the patients may be returned with safety to their homes, and thus make room for others in the institutions, but the ideal way is to gather all the feeble-minded into institutions, and train them in so far as possible to be self-supporting—plenty of industrial occupation and very little academic training. From 30 to 50 per cent. can be made entirely self-supporting after 10 years' training. Take the women of child-bearing age first and teach them to raise and can small fruits, raise poultry and garden truck, knit underwear, weave rugs, carpets, etc. Then take the others as young as possible and the economic problem comes close to solution. But do not talk—get to work. The numbers are increasing. If they are not cared for in well-conducted training schools, where they may learn to contribute toward their own support, they must be kept in almshouses, reformatories, prisons and other institutions, and when they are led into evil ways the taxpayers pay for their arrest, their trial and the damage they have done. If feeblemindedness is to be checked, physicians personally must do something.

### Preventable Neuroses

DR. C. H. HUGHES, St. Louis: I wish to speak about the prevention of the neuroses which underly the physical, the moral and the mental integrity of the people, and which, if not considered and timely regarded, will eventuate in degeneration and degradation of our people, such as have visited the people who have gone before. The neuroses constitute the bane of our civilization. It was the neglect to care for a neurosis that caused the greatest of human generals to fall. It was a neglected epileptoid condition that caused Napoleon Bonaparte to lose the battle of Waterloo. As physicians we are for prevention of the neuroses, those conditions of mind and of the nerve centers that have so much to do with the individual in the community, with the individual on the firing line in the battle of life, and with the individual who has to meet the duties and obligations of our modern civilization, with its strenuous demands, in order to conserve the vitality of the race and save America. We must prevent neuroses because they are the bane of civilization; they are the bane of the family life; they are the bane of social life. The incongruities and unhappiness that exist in families and revealed so largely in the divorce courts are the product on one side or the other, and often on both, of the dominance of the neuropathic element in one or the other, or both members of the family. Lawyers speak of incompatibilities, but these individuals are instances of neurotic ill-adaptability. They are psychical misfits. By neuroses I mean not alone functional conditions of the nervous system, because the line of demarcation between functional and organic disease is only a question of time and of study

and further observation, but the functional affections of yesterday which are the organic troubles of to-day. The time is coming when we will understand hysteria to be an organic disease. Insanity comes down to us in its predisposing element in the majority of instances as an inherent predilection, an inherent organic tendency, and superadded to it comes the disturbance or influence of environment, the disturbing influences of depressive passion, the influences of conditions of over-strain, over-worry, which over-annoy the human mind. We should have a reasonable regard for the powers of the growing child, so that he may not be overstrained. He should have an adequate amount of fresh air, abundant nutrition, ample time for rest; and the prevention of those conditions which come from excesses is the cardinal principle which underlies the prevention and evolution and final destructive development of all neuroses.

### Discussion on Mental Conditions

DR. JOHN N. HURTY, Indianapolis: What if we do save a child from diphtheria or scarlet fever, and yet fail to save it from some neurosis. The child is lost just the same. The longer I live and work in the science of hygiene, the more I am convinced that it is hopeless to work with the adult. We must go back and instruct the child; that being done we have taken the first step. Under our present form of education we do not do that except to a limited degree. The thought is gradually penetrating our minds that the child must have playgrounds and fresh air. We have been shutting out the air from the school room and calling it economy. We have been buying sites for school houses without playgrounds, and calling that economy, and it is the worst kind of extravagance. Something must be done to prevent the building of insane asylums, taxing the people, raising the rates, and having insane on every hand, and the way to do this is to begin with the child.

DR. HENRY A. NORDEN, Sturgeon Bay, Wis.: Aside from trying to make a living in the practice of medicine, I have been riding a hobby—the education of children. Neurotic conditions are superinduced by night studies on the part of children. Do not blame the teachers; do not blame the school board, but blame the people who are behind them and have them prevent the school board from doing what they should do. It is absolutely necessary, considering the way education is carried on to-day, for the child to study at night or to sacrifice the playtime of the day. It is almost impossible for children to study in school while one section of the school room is reciting. I have suggested frequently in my work that the number of hours of school sessions be cut down; that we use the school session for the recitations and explanations, and allow a part of the day to be used for pleasure and part for study. In that way we can prevent neurotic conditions that are produced by night studies.

DR. E. C. ROGERS, Faribault, Minn.: Wherever there is a family with two feeble-minded children, that family ought to be studied carefully, its ancestry gone into, and the mental condition of these children studied carefully, and from the work that is now being carried on we hope to have data which will give us the facts necessary to make statements as to what shall be done toward prevention of feeblemindedness.

## SYMPOSIUM ON VENEREAL DISEASES

### Report of Committee on Education of the Public as to Communicability and Prevention of Gonorrhea and Syphilis

DR. GEORGE M. KOBER, Chairman, Washington, D. C., presented this report which contained several recommendations, which were referred to the executive committee for consideration, and which were reported back to the general meeting subsequently in the following amended form: The committee recommends:

1. The recognition, study and control of the prevalence of these, as with all other communicable preventable diseases, in order to ascertain their distribution.

2. An educational campaign for parents of all social classes, and children of all ages and sexes. This teaching should be not only moral, but also medical in the widest sense.

(a) Proper distribution of circulars, pamphlets and other literature by state health departments through all suitable channels.

(b) State health departments to instruct all of its local health officers in sexual matters, and direct them to make a systematic effort to educate the people in their respective communities.

(c) State health departments to make a definite and determined effort to awaken and interest the medical profession in this fight against venereal diseases.

(d) State health departments to send out specially trained paid teachers and lecturers of their own, supported by exhibits and lantern slides to address special meetings of parents, health officers, medical men, teachers and others in schools, colleges, churches, etc., on these and other preventable diseases.

(e) State health departments to encourage the organization of local leagues or associations whose purpose shall be the support of and control of a crusade against the spread of all communicable diseases. Said societies to include every profession and walk of life; to depend on philanthropists for necessary funds, rather than on paid subscriptions for fundamental support.

(f) Health departments to interest and provide for the authorities having charge of the educational curriculum in public and in private schools. (1) By introduction of biology into the graded courses of all schools: (2) To provide instruction in sexual matters for students of the upper grades; (3) by special instruction to normal school students who are to become the instructors. To impress on presidents, deans, preceptors, and teachers the necessity of exercising their influence on students in reference to the communicability of syphilis and gonorrhea, and to inculcate a morale of protection among the college fraternities.

(g) To utilize the public press for the proper occasional presentation of the subject, and to discourage the display of advertising matter which encourages the exposure to dangers in these diseases.

(h) To utilize church clubs, fraternal societies, trade unions, women's clubs, and especially mother's clubs for instruction of parents.

(i) Health departments to recommend the enactment of laws for: (1) Physical inspection and segregation of prostitutes. (2) Notification and report (by number, if desired) of venereal cases. (3) Physical examination of men before marriage, male applicants for marriage license in order to obtain it being required to submit to an examination by a duly qualified physician for the purpose of ascertaining whether said applicants are free from venereal diseases. 4. To make it a crime to spread any venereal disease. 5. By keeping open free night dispensaries and maintenance of special dispensaries and hospitals for these diseases.

(j) Advocacy of temperance on account of the relationship between alcoholism and venereal diseases.

(k) Advocacy of personal cleanliness and venereal prophylaxis. Advocacy of early marriages.

These recommendations were adopted.

### Venereal Diseases Among Seamen of the Merchant Marine

DR. J. W. KERR, Washington, D. C.: There were treated 1,281,427 cases of sickness from all causes, or an average of 53,392 patients annually. Of the total number, 106,090 were cases of syphilis in one of the three stages, 4,420+ being the annual average; 117,336 cases of gonorrhea (including gleet), representing an annual average of 4,889 cases; and 39,819 were cases of chancroid (including ulcer of the genitals), or an average annually of 1,659+ cases. The total number of venereal cases treated and classified as above during the period mentioned was 263,245, or an average annually of 10,969 cases. It will thus be seen that these venereal cases represented 20.5 per cent. of the total number treated. This percentage it will be understood represents cases of syphilis, gonorrhea and chancroid, and does not include complications or sequelæ of those diseases.

### Plea for Application of Methods of Preventive Medicine to Venereal Disease

DR. J. R. KEAN, Washington, D. C.: I do not think that it is either wise or necessary for scientific men interested in the good of the race and of the country to take any part in the discussion of the relation of this evil to society. The prostitute is a present confrontation of the problem. There is no reason to think that these diseases are beyond the reach of preventive medicine any more than other contagious diseases, and their immunity from restriction, must be attributed to the public disinclination to discuss them and legislate concerning them. I hope that this association will not be deterred, by the outcry of certain classes of persons who are accustomed to think with their emotions rather than their brains, from taking the bold stand in this matter which is justified by science, by common sense, and by the demands of the public good.

### Venereal Prophylaxis in the U. S. Navy for the Benefit of Public Health Officials

DR. CHARLES N. FISKE, Washington, D. C.: About 50 per cent. of the enlisted men of the Navy have a venereal disease during an average of 4 years. During 1908, there were 4,681 original venereal infections which entailed a loss of service

and expense for treatment of 106,526 sick days; there were 1,001 cases of syphilis which represented nearly 7 per cent. of the total physical disability of the Navy for that year. While the morale has steadily and vastly improved during the past 10 years in other respects the damage resulting from this class of affection had assumed such proportions 4 years ago that numerous medical officers no longer felt justified in waiting indefinitely for moral regeneration; they felt that military efficiency demanded activities promising more immediate results; they instituted personal prophylaxis by the use of antiseptic irrigation and inunctions following exposure and on return to the ship or station. Certain results achieved caused the Navy Department nearly 2 years ago to authorize the extension of this work in connection with the customary educational propaganda, and distribution of confidential circulars throughout the service. Sailors and marines do not contract venereal disease from the navy, but from civil communities which are as notoriously indifferent to venereal disease as they were formerly to typhoid and other widespread infections. Military services have practiced compulsory notification of venereal disease for years and expect civil authorities to undertake similar measures for control. The source of the Navy's 15,000 first enlistment recruits, and the destination of a similar number of men discharged each year, is the civil population; its statistics would indicate that one youth out of every 6 in our urban population between the ages of 17 and 24 contracts a venereal infection each year. Venereal disease has by no means yet been conquered in the Navy, but there is evidence that its ravages are being materially lessened, and that instead of encouraging vice through the hope of immunity, the margin of failure of this prophylaxis is sufficiently wide to deter an increasing proportion of the personnel from sexual indulgence. The desire for clean men on clean ships has been stimulated, and no sense of security has been engendered.

### Discussion on Venereal Diseases

DR. GARDNER T. SWARTS, Providence, R. I.: Last year, as president of this Association, I took the liberty of appointing a committee to take up the subject of venereal prophylaxis, with the idea that the people of our country were prepared to receive instruction in these matters. These communicable diseases are preventable, and if boards of health are to conserve the public health, then these diseases should be put on the reportable list and steps taken to prevent their prevalence as far as possible.

DR. J. S. NEFF, Philadelphia: I think that it is not possible to compel physicians to reveal the existence of these diseases among their patients, and they will not report such cases to health departments.

DR. JOHN N. HURTY, Indianapolis: I believe that the road leading to the prevention of venereal diseases is the longest and roughest which hygiene and sanitary science has to travel. At this time, every tribe, every nation, and people of the earth are thoroughly syphilized. Think of that, and now we are proposing to eradicate it. The first man to propose education to eradicate these diseases was Solomon, and he began 5,000 years ago, and with education, such as he gave, and such as we propose to give, these diseases have increased and multiplied. Until we put aside that prudery which now prevents us from attacking this problem correctly, and which prevents us from teaching the child about his sexual nature and procreation, we can make no progress. Let us begin with the child.

### Remarks by Colonel Theodore Roosevelt

Col. Theodore Roosevelt, who was unable to address the Association at the Auditorium, as expected, went out to Whitefish Bay in an automobile, and addressed the Association there. He said in part: I regret very much that I was unable to meet you this morning. I could not do so, as the schedule mapped out for me was three times as much as I could do. Like any other man in public affairs, I am awake to the needs of the public health. It is necessary to join our efforts for the preservation of the public health. It is important not only to keep the health of the individual, but also to keep the health of the nation. Yellow fever is a distinctive national problem. Several nationalities in the western hemisphere have dealt with it and must deal with it effectively to prevent the ravages of this scourge. The question of dealing with the public health is a matter of the last two generations. Half a century ago comparatively nothing was known of diseases which were a scourge to the human race. About 600 years ago the black death desolated Europe, a disease which undoubtedly we could deal with now. Then it took off two-thirds of the population of Europe. I have just come from a trip to the middle of Africa, where disease ravages mankind as it did our ancestors. I passed through regions where the sleeping sickness has to its credit over 200,000 deaths in one neighborhood.

The advances made in the medical profession during the last half century are incalculable. The work on the Isthmus of Panama could not have been done in its present shape a decade ago. The authorities could not have grappled with disease as they do now. The prime requisite in every nation is to have every man and woman an effective unit. You are dealing with the basic problem of citizenship. Men cannot be good unless they are healthy.

I welcome to this convention the delegates who come from foreign countries, especially from the Americas. In the two Americas we are solving the problem of living peacefully together. Our only rivalry, far different from Europe, is the endeavor to see which is best able to cope with the problems that confront us all. I welcome you as our rivals, who are doing all in your power to uplift and care for the physical well-being of the human race.

### Disappearance of Yellow Fever from the Mexican Republic

DR. E. LICEAGA, of Mexico City, contributed a paper in which he stated that from the twentieth of December, 1909, not a single case of yellow fever had been observed either there or in any other part of the Mexican Republic. In spite of the success obtained, the sanitary service continues its action with the same regularity as in previous years, although it is now directing its energies especially against malaria.

### Quarantine or Isolation in Diphtheria

DR. JAMES ROBERTS, Hamilton, Ont.: I wish to call attention to the dominance of the personal contact factor in the spread of this disease. Defective drains, bad ventilation, etc., although prejudicial to health, cannot cause diphtheria which is due to the presence of certain bacteria. Overcrowding assists the spread of diphtheria; 45 per cent. of my cases, representing not more than one-quarter of the school population, come from the districts where the industrial classes are centered. The presence of an ignorant foreign element hinders the work of sanitation and favors the spread of disease. Diphtheria, owing to the manner by which it is spread, is a school disease. The Boston board of health, after an exhaustive investigation, concluded that it would be impracticable to isolate bacillus carriers who did not themselves suffer from the disease, as these constitute 1 per cent. of all healthy school children, and these germs are ordinarily of little virulence. The restriction of this disease is for practical purposes limited to isolation of clinical cases and control of the contacts in connection with these. When isolation cannot be strictly carried out at home, hospitalization is the best method. But isolation hospitals are very unpopular, owing to their usually poor equipment, the danger of cross infection, etc. They safeguard the community, but often at the expense of the individual. Our present day conception of diphtheria as pre-eminently a school disease makes it imperative that the inspection of school children should be thorough enough for the detection of early cases, and of those children harboring virulent bacilli. When this has been accomplished, regulations intelligently enforced providing for the proper isolation of all cases, either at home or in suitable institutions, will be productive of better results and much less annoyance and hardship than the continued enforcement of antiquated laws and regulations incompatible with our present knowledge of diphtheria.

### The Ventilation of Sleeping Cars

DR. T. R. CROWDER, Chicago: The only available method of accurately estimating the air supply of running cars is by determining the amount of carbonic acid gas which their atmosphere contains, and from this computing the amount of air which enters. The problem is mathematically simple, and rests on the known amount of carbonic acid thrown off by respiration. This method has been applied in the study of sleeping-car ventilation. About 2,000 samples of air have been analyzed from these cars. It shows that an average of approximately 40,000 cubic feet of air is supplied hourly to the main sleeping compartment of standard cars, which are equipped with the ventilating system now in common use by the Pullman Company, and that the amount is rarely, if ever, under 20,000 cubic feet. There are rarely more than 20 people in a sleeping car; hence each person is supplied with about 2,000 cubic feet of air each hour. This applies to the findings in occupied berths, both lower and upper, as well as to the car in which the berths are not made up. The high wind pressure to which running railway cars are subjected results in fair ventilation even when they have no special ventilating devices. The amount of air which they receive will vary from 15,000 to 50,000 cubic feet an hour, depending on various conditions.

When cars are uncomfortable and feel "stuffy" the fault is not generally to be laid to an inefficient air supply, as is commonly supposed. It rarely happens that the air supply is so inadequate to bring about this condition, though it may at times contribute to it. The fault generally lies chiefly in an improper control and regulation of the heat supply. The degree of humidity of the atmosphere is also an important factor; but its control is difficult, and often impossible. In my opinion, heat control is a more important problem in maintaining comfort in sleeping cars than is the furnishing of a greater air supply; and relatively greater attention should be concentrated on this element of the problem of maintaining a hygienic atmosphere in cars.

### Owen Bill Endorsed

The Association endorsed the principles embodied in the Owen Bill for the establishment of a national department of health.

### New Sections

Two new sections, the Section on Sociology, and the Section on Sanitary Engineering were formed.

### Resolutions Adopted

INSTRUCTION IN HYGIENE AND SANITATION

A resolution was adopted recommending that a committee be appointed to consider and report next year a scheme (of which Dr. Probst shall be chairman) for instruction in hygiene and sanitation in high schools, and in colleges and universities, with the view to bringing the necessity for such instruction with definite recommendations to the attention of educational authorities. Other resolutions were adopted as follows:

TERMINAL DISINFECTION

WHEREAS, A considerable number of municipal health officers believe terminal disinfection at the conclusion of communicable disease is of questionable value and extravagant in practice; and

WHEREAS, A few municipal health officers of sound judgment and highest attainment have abandoned this practice as a prophylactic measure; therefore, be it

*Resolved*, That the Municipal Health Officers Section refer to the executive committee a recommendation that the American Public Health Association appoint a committee to study the end results and practice in communities where terminal disinfection is no longer practiced at the conclusion of cases of communicable disease.

COOPERATION WITH CENSUS BUREAU

*Resolved*, That this Association appoint a committee to cooperate with the Bureau of the Census in establishing standard methods of accounting for municipal sanitation.

INSTRUCTION OF CHILDREN IN SEXUAL MATTERS

*Resolved*, That this Association offers and accords its hearty approval and commendation of the educational work carried on by the *Ladies' Home Journal* regarding the necessity and ways of teaching children the truth about reproduction and the sexual life.

## *Medical Economics*

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, POSTGRADUATE WORK, CONTRACT PRACTICE, INSURANCE FEES, LEGISLATION, ETC.

### An Overcrowded Profession in Nevada

A Nevada correspondent writes regarding the proportion between physicians and population as given in the Educational Number of THE JOURNAL:

"In this state about thirty-five new physicians locate each year, with little or no increase in the population and no likelihood of there being much increase. These new men usually 'go broke' in a short time. Those of us who are here, and who are not crowded out by the new men who are able to stay, have all that we possess invested in property and consequently are unable to leave. Of course, there are exceptions, as some have made investments which have been good ones, but the fact remains that few physicians here are out of debt and physicians are not looked on at the stores as good credit. Many eastern physicians read the boom accounts of some mining camp and think that there are splendid openings in Nevada, but long before they get here, the place may have dozens of roving physicians who have located there. Ethics do not count for much in these new towns. If a doctor gets a contract with a mine for a year, he seldom gets it renewed, as the competition for the place is so keen that some other physician underbids him. The fact that physicians will look for desirable locations where the population is the lowest and the health is the best speaks volumes for the lack of business sense displayed by the average physician. The fact remains that new physicians arrive here at the rate of about thirty-five a year in a state with a population of only about 40,000. What would you think if thirty-five new doctors located each year in a town like South Bend, Indiana? Yet the total population of the state of Nevada is not much greater than that of South Bend, while health conditions are naturally much better."

Our correspondent calls attention to a serious situation. A state with as small a population as Nevada (42,325, according to the 1909 estimate) and with this population widely scattered, can support only a limited number of physicians. Each new arrival means increased competition and more difficult conditions for all. The proportion of physicians to population in the United States is one to 655—if we count only those legally entitled to practice and in active practice—while in Nevada the relative number of physicians is nearly three times as great, there being one to every 239 inhabitants. These conditions make it almost impossible for newcomers to hope for success or even for a living. The facts should be kept in mind and local conditions carefully considered by young physicians before deciding on a location, for Nevada is by no means the only place that is overcrowded, so far as physicians are concerned.

### POSTGRADUATE COURSE FOR COUNTY SOCIETIES

DR. JOHN H. BLACKBURN, DIRECTOR
BOWLING GREEN, KENTUCKY

[The Director will be glad to furnish further information and literature to any county society desiring to take up the course. Several weeks' programs are given in this issue so that hereafter the programs may appear from week to week well in advance of the time for their use.]

### First Month—Third Weekly Meeting

CONGENITAL SYPHILIS

1. DYSTROPHIES SYPHILITIC IN ORIGIN: Syphilitic stigmata. Small child, slight resistance to diseases, subject to rickets. Asymmetry of skull, microcephaly, flat nose, palate. Spinal deformities, dactylism, flat-foot, luxation of hip. Aural and ocular defects. Retarded mental development, idiocy. Malformation of teeth.
2. EARLY CONGENITAL SYPHILIS: Time of onset of symptoms. Coryza, facies, saddle-nose, rhagades, anemia. Cutaneous lesions, macular eruptions, psoriaform syphilide, mucous patches, pemphigus neonatorum. Nails. Hemorrhages.

Bony changes, skull, pseudoparalysis of Parrot, osteochondritis syphilitica. Involvement of liver, spleen, testicle.

3. LATE CONGENITAL SYPHILIS: Age at onset. Earlier manifestations. Development, infantilism. Teeth. Keratitis, chronic otitis. Nose and palate. Skin lesions, gummata and ulcers. Bone lesions, lymph nodes.

### Fourth Weekly Meeting

#### DIAGNOSIS OF SYPHILIS

EARLY: Microscopic diagnosis, *Spirochæta pallida*, primary and secondary lesions.

LATE: Previous history, scars, discolorations of skin, alopecia, bone nodes, frequent miscarriages.

SERUM DIAGNOSIS: Wassermann reaction, theory, technic. Noguchi modification. Value of reaction, occurrence in different stages of syphilis, in other diseases, prognostic value.

THERAPEUTIC TEST: Value of antisyphilitic treatment in obscure conditions.

#### TREATMENT

PROPHYLAXIS: 1. Control of prostitution. 2. Control of the syphilitic, by reporting the disease, by providing hospitals, by vaccination. 3. Legal measures, regarding marriage, occupations, "private-disease" quacks. 4. Education of the medical profession, of the public. 5. Personal prophylaxis. 6. Prophylaxis of hereditary syphilis.

ABORTIVE TREATMENT: 1. Excision or cauterization of the chancre; practical value of each. 2. Constitutional abortive treatment.

CONSTITUTIONAL TREATMENT: Methods of treatment; expectant, interrupted, continuous. 1. Mercury. Physiologic action. Administration by ingestion, inunction, injection, fumigation, baths and plasters; advantages and disadvantages of each.

2. Potassium iodid. Physiologic action of iodin. Therapeutic effects. Methods of administration, preparations, dosage, untoward effects. 3. Mixed treatment. Indications, advantages. 4. Serum treatment.

TREATMENT OF LOCAL MANIFESTATIONS: 1 Chancre. 2. Skin and mucous lesions. 3. The eye.

GENERAL TREATMENT: Diet, hygiene, etc.

### Monthly Meeting

Etiology and Early Diagnosis of Syphilis.
The Methods of Treatment of Syphilis.
Syphilis as a Factor in the Social Life of the Community.

#### REFERENCE BOOKS FOR THE FIRST MONTH

Works on "Syphilis," by Keyes, Hutchinson, Fournier, and Power and Murphy.
Morrow: Genitourinary Diseases, Syphilology and Dermatology.
Bangs and Hardaway: Genitourinary Diseases, Syphilis and Diseases of the Skin.
Taylor: Genitourinary and Venereal Diseases.

### Second Month—First Weekly Meeting

*General Subject for the Month: Diseases of the Blood-Vessels*

#### ANATOMY

ARTERIES: Gross anatomy, size, shape, course, anastomoses, terminal arteries. Microscopic anatomy, the three coats, vasa vasorum. Lymphatics and nerves. Arterioles.

CAPILLARIES: Structure, size.

VEINS: Histologic structure; anastomoses; sinuses.

#### PHYSIOLOGY

VELOCITY of blood flow in arteries, veins and capillaries, methods of determination, variations in flow and causes.

BLOOD-PRESSURE: Methods of determination, the sphygmomanometer. Arterial pressure, systolic, diastolic and mean. Capillary pressure. Venous pressure. Production of normal pressure: (1) heart beat, (2) resistance to blood-flow, (3) elasticity of arteries, (4) quantity of blood. Effect on blood-pressure of variations in each of above-named factors. Effect of muscular efforts; of respiratory movements.

THE PULSE: Pulse wave, velocity, form of wave, sphygmograph, anacrotic and catacrotic limbs. Pulse wave in health and in disease. Venous pulse.

#### VASOMOTOR NERVES

VASOCONSTRICTORS: Origin, center in medulla, course, general distribution, tonicity. Vasoconstrictor reflexes, pressors and depressors.

VASODILATORS: Origin, general course and distribution, properties. Vasodilator reflexes.

#### REFERENCE BOOKS FOR THE SECOND MONTH

Babcock: Diseases of the Heart and Arterial System.
Meigs: Human Blood-vessels.
Russell: Arterial Hypertonus, Sclerosis and Blood-pressure.
Janeway: Clinical Study of Blood-pressure.
Text-books on Practice of Medicine and on General Surgery.

### Second Weekly Meeting

#### DISEASES OF THE ARTERIES

#### ARTERIOSCLEROSIS

ETIOLOGY: Age, sex, occupation, hypertension, syphilis. Chronic intoxications, mode of living, renal disease. Rôle of poisons in production of arteriosclerosis. Relation between arterial and kidney lesions.

PATHOLOGY: 1. Nodular form. Gross and microscopic changes. 2. Senile form. 3. Diffuse arteriosclerosis. Frequency with which different arteries are involved. Involvement of visceral arteries. Sclerosis of veins.

SYMPTOMS: Increased blood-pressure, thickening of arteries, hypertrophy of heart, change in heart sound. Cardiac symptoms, due to involvement of coronary arteries. Cerebral symptoms, transient paralysis, aphasia, vertigo, hemorrhage, cerebral degenerations. Renal symptoms. Arteriosclerosis of the splanchnic region. Sclerosis of arteries of lower limbs, intermittent claudication.

TREATMENT: Prophylactic, diet, exercise, habits. Curative, physiologic and therapeutic actions of iodin, mode of administration.

SYMPTOMATIC: Vaso-dilators, purgative, venesection, etc.

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## *State Boards of Registration*

### COMING EXAMINATIONS

ARIZONA: Phœnix, October 3-4. Sec., Dr. Ancil Martin.

COLORADO: The Capitol, Denver, October 4. Sec., Dr. S. D. Van Meter, 1723 Tremont Place.

GEORGIA: Regular, The Capitol, Atlanta, October 11. Sec., Dr. I. H. Goss, Athens; Homeopathic, Atlanta, October 3. Sec., Dr. R. E. Hinman, 153 Whitehall Street.

IDAHO: Boise, October 4. Sec., Dr. O. J. Allen, Bellevue.

ILLINOIS: Coliseum Annex, Chicago, October 19-21. Sec., Dr. James A. Egan, Springfield.

KANSAS: Topeka, October 13. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, October 18-19. Sec., Dr. A. B. Brown, 108 Baronne Street.

MICHIGAN: Lansing, October 11-13. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: State University, Minneapolis, October 4-6. Sec., Dr. W. S. Fullerton, St. Paul.

MISSISSIPPI: Jackson, October 11-12. Sec., Dr. S. H. McLean.

MONTANA: The Capitol, Helena, October 4. Sec., Dr. William C. Riddell.

NEW JERSEY: State House, Trenton, October 18. Sec., Dr. H. G. Norton.

NEW YORK: Albany, September 27-30. Chief of Examinations Division, Dr. Charles F. Wheelock.

NORTH DAKOTA: Grand Forks, October 4-6. Sec., Dr. H. M. Wheeler.

OKLAHOMA: Muskogee, October 11. Sec., Dr. Frank P. Davis, Enid.

RHODE ISLAND: State House, Providence, October 6. Sec., Dr. Gardner T. Swarts.

WYOMING: State Capitol, Cheyenne, October 12-14. Sec., Dr. S. B. Miller, Laramie.

### West Virginia July Report

Dr. H. A. Barbee, secretary of the West Virginia State Board of Health, reports the written examination held at Charleston, July 11-13, 1910. The number of subjects examined in was 9; total number of questions asked, 120; percentage required to pass, 80. The total number of can-

didates examined was 67 of whom 48 passed and 19 failed. The following colleges were represented:

| PASSED College | Year Grad. | Per Cent. |
|---|---|---|
| University of Louisville | (1910) 80, 83, 83, 84, 85, 86, 90 | |
| Johns Hopkins University | (1910) | 86 |
| University of Maryland | (1910) | 82 |
| College of Physicians and Surgeons, Baltimore | (1910) 80, 82, 82, 82, 83, 83, 83, 83, 84, 84, 84, 85, 85, 86, 87, 90. | |
| Baltimore Medical College | (1908) 85; (1910) | 85 |
| Maryland Medical College | (1910) 80, 81, | 86 |
| Barnes Medical College | (1910) | 85 |
| Cornell University Medical College | (1910) | 86 |
| North Carolina Medical College | (1910) | 81 |
| Eclectic Medical College, Cincinnati | (1910) | 84 |
| Jefferson Medical College | (1910) 84, 86, 87, 89, | 89 |
| University College of Medicine, Richmond | (1910) | 82 |
| Medical College of Virginia | (1910) 81, 82, 83, 85, | 85 |
| University of Virginia | (1910) | 87 |

| FAILED | | |
|---|---|---|
| College of Physicians and Surgeons, Chicago | (1910) | 78 |
| University of Louisville | (1908) 67; (1910) 74, 75, 75, 78, 78, 78, 79. | |
| College of Physicians and Surgeons, Baltimore | (1910) 76, 77, | 77 |
| Eclectic Medical College, Cincinnati | (1910) 71, 74, | 75 |
| Meharry Medical College | (1908) 77; (1910) | 74 |
| Chattanooga Medical College | (1903) 77; (1910) | 77 |

The following questions were asked:

### OBSTETRICS AND GYNECOLOGY

1. What forms of hemorrhage are met with before, during or after labor, treatment of each? 2. Define puerperal eclampsia and give its treatment. 3. Name the source, character, relative quantity, and functions of the liquor amnii. 4. What are the most serious complications met with in breech presentation? 5. How would you treat a case of hour-glass contraction? 6. How would you treat a case of face presentation? 7. How would you treat a case of gonorrheal conjunctivitis in an infant? 8. Give five causes of metrorrhagia. 9. Give in full your treatment of gonorrheal endometritis. 10. Give symptoms and treatment of cystitis.

### PRACTICE OF MEDICINE AND PEDIATRICS

1. Give the diagnosis and treatment of acute follicular tonsillitis. 2. What is the practical import of hematuria, and how can its source be diagnosed? 3. Give the etiology and treatment of St. Vitus' dance. 4. Give the symptoms indicative of impacted gallstone. 5. Give some suggestions for diet after weaning and the feeding of children between the ages of one and two years. 6. State some rules regarding bathing, exercising and clothing infants. 7. Describe and treat infantile syphilis. 8. Differentiate pneumonia from capillary bronchitis, give treatment of each. 9. Thrush: State conditions that favor its development. Give treatment. 10. What diseases in infancy usually precede congestion of the brain? Give necessary precautions to prevent.

### CHEMISTRY AND MEDICAL JURISPRUDENCE

1. Explain the following terms: atom, molecule, oxidation, reduction, analysis, synthesis. 2. Write the formulas for calomel, bichlorid of mercury, nitrate of silver, copperas, saltpeter. 3. What are the source, properties and uses of quinin, strychnin and cocain? 4. Name any five organic acids and give their source and uses. 5. Distinguish between wood alcohol and grain alcohol as to their properties and uses. 6. Explain the chemistry of respiration. 7. What are the sources and properties of phenol (carbolic acid)? How would you treat a case of phenol poisoning? 8. Define insanity and give some of its various forms. 9. What is senile dementia? 10. What is the hydrostatic test and what is its value in a case of suspected infanticide?

### ANATOMY AND EMBRYOLOGY

1. Into what classes are the bones divided and give a few instances of each. 2. Describe the antrum of highmore. 3. Trace a drop of blood from the tip of the tongue to the index finger. 4. Name the lobes and fissures of the brain. 5. Describe the solar plexus nerves. 6. Describe the stomach. 7. Name the abdominal viscera. 8. Describe the aorta and name its branches. 9. What changes take place in the vascular system at birth? 10. Describe the embryo at end of six weeks of gestation.

### SURGERY

1. Describe the treatment of a bullet wound of the leg. 2. Define thrombosis; embolism. Describe the symptoms of venous thrombosis of the leg. 3. Treat a compound comminuted fracture of the middle third of femur. 4. How would you distinguish between a fracture at the neck of the femur without impaction and a dislocation? 5. Burns: Define, classify; give prognosis and treatment. 6. Give the nature and treatment of Potts' fracture. 7. Name the dangers and give the treatment of carbuncle. 8. What is hemorrhage? Divide anatomically and clinically, treat mechanically and therapeutically. 9. How would you determine that a limb was injured beyond hope in a crushing accident. 10. Give the cause and treatment of varicose ulcers.

### BACTERIOLOGY AND HYGIENE

1. What are pyogenic bacteria? 2. Define germicide, antiseptic, asepsis, sterile, disinfectant. 3. Define immunity. What is natural immunity, acquired immunity, inherited immunity? 4. How is diphtheria antitoxin obtained? What is the usual dose? 5. What disease is transmitted by a bite of the infected *Stegomyia fasciata*? 6. How do forests benefit public health? 7. Give six desirable factors in the location of a tuberculosis sanitarium. 8. What four diseases may be acquired from drinking cow's milk? 9. What objections are advanced against vaccination? 10. Name five good disinfectants and give indications for their use.

### MATERIA MEDICA AND THERAPEUTICS

1. What are antiseptic remedies? Name three and give indications for their use. 2. What are excito-motors? Name three and explain therapeutic action of each. 3. Give two cerebral sedatives and give therapeutic action. 4. Aconite: Physiologic action. Therapy and dose of tincture. 5. Apomorphin: From what derived, physiologic action, therapy and dose. 6. Nitroglycerin: Give properties, physiologic action, therapy and dose. 7. Digitalis: Dose and indications for use. 8. Name three emetics with dose of each. 9. Ferrum: Name four preparations and dose of each. 10. Atropin: Source, physiologic action and dose.

### PHYSIOLOGY AND HISTOLOGY

1. Food: Divided into how many classes, give example and chemical composition of each. 2. Respiration: Describe it, give number in adult and in child one year old. 3. Animal heat: Describe it, give temperature in mouth, axilla and rectum and daily variation. 4. Describe the course and changes nitrogenous foods undergo in the body. 5. What is the effect of alcohol long continued on the human body? 6. Red corpuscles: Describe them, where formed and destroyed and give function. 7. Describe the general, pulmonic and portal circulation. 8. How is the heart nourished and how is arterial tension maintained? 9. Give histology of skin. 10. Give histology of lobule of human lung.

### SPECIAL MEDICINE

1. Define Pott's disease. Make early diagnosis. 2. Define blood pressure. How determined? Give diagnostic value. 3. Give pathology, diagnosis and treatment of progressive muscular atrophy. 4. Name the cardinal symptoms of tumor of the brain. 5. Give etiology, diagnosis and treatment of optic neuritis and optic atrophy. 6. For what conditions and in what strength would you use the following in the eye: boric acid, sulphate zinc, nitrate silver, atropin sulphate, cocain, bichlorid of mercury and yellow oxid of mercury. 7. Describe, diagnose and treat nasal polypi. 8. Give the etiology, pathology and treatment of the symptom ozena. 9. Diagnose and treat hysteric aphonia. 10. Give etiology, symptoms, diagnosis and treatment of spasm of the larynx in children.

## Missouri June Report

Dr. Frank B. Hiller, secretary of the Missouri State Board of Health, reports the written examinations held at St. Louis, and Kansas City, June 13-15, 1910. The number of subjects examined in was 12; total number of questions asked 90, percentage required to pass, 75.

At the examination held at St. Louis, the total number of candidates examined was 125 of whom 114 passed and 11 failed. The following colleges were represented:

| PASSED College. | Year Grad. | Per Cent. |
|---|---|---|
| Yale Medical School | (1909) | 87.3 |
| Northwestern University Medical School | (1897) | 78.6 |
| College of Physicians and Surgeons, Chicago | (1910) | 82.2 |
| Harvard Medical School | (1907) | 87.4 |
| American Medical College St. Louis | (1910) 75, 76, | 81.2 |
| St. Louis College of Physicians and Surgeons | (1909) | 81.2 |
| Barnes Medical College | (1909) 75; (1910) 75, 75.2, 75.2, 77.2, 79.4, 82.5, 83.4, 83.8, 84.2, 85.7, 87.3, 87.3, 87.8. | |
| St. Louis University | (1909) 84.6, 86.4; (1910) 75.2, 78.3, 78.3, 78.4, 80.1, 80.6, 81.6 81.9, 82.1, 82.2, 82.4, 82.6, 82.7, 83, 83.2, 83.2, 83.2, 83.6, 83.6, 84, 84.1, 84.3, 84.8, 85, 85.2, 85.5, 85.7, 86.1, 86.2, 86.3, 86.4, 86.6, 86.6, 88.2, 88.4, 88.6, 88.9, 89.6. | |
| Washington University, St. Louis | (1908) 75.1; (1910) 77.2, 78.2, 78.6, 78.8, 78.9, 79.1, 79.2, 79.4, 79.7, 80.5, 80.6, 80.8, 81.1, 81.2, 81.3, 81.5, 81.7, 82.3, 82.6, 82.7, 82.8, 83.2, 83.3, 83.3, 83.4, 83.5, 83.6, 83.6, 83.9, 84, 84, 84, 84.1, 84.2, 84.5, 84.8, 85.1, 85.2, 85.6, 86.2, 86.8, 86.9, 87.2, 87.5, 87.9, 88.8, 92.5. | |
| Woman's Medical College of Pennsylvania | (1908) | 83.6 |
| Meharry Medical College | (1907) 76; (1909) | 75.9 |
| University of Nashville | (1904) | 75 |

| FAILED | | |
|---|---|---|
| St. Louis College of Physicians and Surgeons | (1906) 56.7; (1909) 66.5. | |
| Homeopathic Medical College of Missouri | (1909) | 70.6 |
| Barnes Medical College | (1907) 53.2; (1910) 62.5, 65.6, 67.7, | 68.8 |
| Ensworth Medical College | (1910) | 64.1 |
| American Medical College, St. Louis | (1909) | 63.1 |
| Vanderbilt University | (1910) | 30 |

At the examination held at Kansas City, the total number of candidates examined was 31 of whom 29 passed and 2 failed. The following colleges were represented:

| PASSED College. | Year Grad. | Per Cent. |
|---|---|---|
| University of Kansas | (1910) | 82.2 |
| Kansas Medical College | (1894) | 75 |
| Hospital College of Medicine, Louisville | (1904) | 79.4 |
| University Medical College, Kansas City | (1910) 75, 75.3, 78.2, 79.1, 79.2, 79.6, 80.4, 80.6, 80.8, 81.2, 82.8, 84.6, 85.2, 85.3, 87.2. | |
| Ensworth Medical College | (1910) 79.6, 82.9, 83.8, 84.1, | 85.7 |
| Kansas City Hahnemann Medical College | (1910) 80.8, 82.9, | 88 |
| St. Louis College of Physicians and Surgeons | (1907) | 76.1 |
| St. Louis University | (1910) | 86.3 |
| Columbia Univ., Coll. of P. & S. | (1907) | 87.1 |

| FAILED | | |
|---|---|---|
| Ensworth Medical College | (1910) | 69.7 |
| University Medical College, Kansas City | (1908) | 65.8 |

# Book Notices

RADIUMTHERAPY. By Dr. Louis Wickham, Physician in Saint-Lazarre, and Dr. Degrais, Chief of the Laboratory in the Hôpital Saint-Louis. Translated by S. Ernest Dore, M.D., Cantab. With an Introduction by Sir Malcolm Morris, K.C.V.O. Cloth. Price, $5 net. Pp. 306, with 92 illustrations. New York: Funk and Wagnalls Co., 1910.

This is a personal book, and being at the same time scientific it is all the more interesting and valuable for that fact. It is a temperate effort to state the results of the work which Wickham with the collaboration of Degrais has done in this field. There is first a full consideration of the physics of radium as it bears on its therapeutic use, of its effects on tissues and the reasons therefore, and of the technic of the therapeutic use of the agent. All of this is valuable, but the account of technic is particularly so, as this is in great part the result of Wickham's pioneer work. A large part of the work is devoted to therapeutic results and this is conservative and convincing. The results obtained are for the most part those we have learned to expect from *x*-rays in epithelioma, leukoplakia, keloid and other scars, and tuberculosis of the skin. The results shown in these conditions are excellent, but they are not superior to those which have been obtained from *x*-rays in equally competent hands. Indeed, they are striking in their similarity, and support the view that the actinic energy of radium rays and *x*-rays differ very slightly from each other in their effects on living tissues. A very full description is given of the results in cutaneous angiomas; the subject deserves this, for it is with these lesions that the authors have had their most striking results. The results of the treatment of angiomas with radium are beautiful, surpassing any that have been obtained by any other method of treatment except the still more recent one of refrigeration with liquid air or solid carbon dioxid. Equally good results are shown in pigmented nevi.

The book constitutes a report of original research in therapeutics of the highest interest and of practical value. And the book is worthy of the research; it is scientific in spirit, accurate, without loose or overstatement, and conservative. Even without practical interest in the subject, one should find the book entertaining as showing the marvelous results that are being obtained by scientific workers in these new therapeutic fields.

DUODENAL ULCER. By B. G. A. Moynihan, M.S., Senior Assistant Surgeon at Leeds General Infirmary, Eng. Cloth. Price, $4 net. Pp. 367, with 63 illustrations. Philadelphia: W. B. Saunders Co., 1910.

This volume is written in that clear, concise style, which carries the conviction to the reader that the author is master of the subject. There are four short chapters dealing respectively with ulceration of the duodenum in cases of burns or scalds; uremic ulcer; tuberculous ulcer, and ulcer in melenaneonatorum. Then follows a chapter on the important subject, "Symptoms and Diagnosis of Chronic Duodenal Ulcer." The clinical history is so clearly stated that it would seem that the diagnosis should be made almost as easily as the diagnosis of an ordinary case of appendicitis. Some internists perhaps will be somewhat shocked to read: "A description of these symptoms (chronic duodenal ulcer) is to be met with in most of the text-books of medicine under the caption 'hyperchlorhydria' or 'acid gastritis' and the belief that these words are a sufficient diagnosis is very general. After giving a diagnosis of duodenal ulcer I am not infrequently met with the objection that the patient's symptoms are indicative of nothing more than 'persistent hyperchlorhydria.' This is the medical term for the surgical condition duodenal ulcer. Recurrent severe 'hyperchlorhydria' *is* duodenal ulcer." These are rather strong statements but they are backed up by the unusually large experience of a careful observer who has demonstrated the condition present by operation, therefore must have great weight.

The treatment of duodenal ulcer by gastro-enterostomy and the various accessory operations is well discussed, and the technic of the operations clearly illustrated. The use of the terms "vertical" and "horizontal" to define the direction of the incision or line of suture in the intestine or stomach is confusing and unfortunate, as these words have a very definite meaning when used to indicate direction, which is in no sense synonymous with "transverse" and "longitudinal." The clinical picture of perforating ulcer is so clearly drawn that it would seem as though failure to recognize these cases in the future should be the exception. In an appendix is found a detailed report of all of the cases operated on by the author up to date.

This is an excellent work and should be carefully studied by every physician who is treating this class of cases, as there are altogether too many patients going the rounds being treated for so-called dyspepsia and indigestion who ought to be relieved permanently by suitable operation.

PRACTICAL RADIUM. By Heber Robarts, M.D., 5899 Cates Ave., St. Louis. Cloth. 1910.

This is one of those books that begin with the author's portrait. And as that would indicate, it is a personal book. The tone of it reminds one of Mr. Dooley's title for Roosevelt's book on the San Juan campaign, "Alone in Cuby." It is filled, not with accepted knowledge of radium and the therapeutic uses of radium, but with the author's peculiar views of this subject. These are curious, often naïve, and by no means lacking in confidence. "Practical Radium. The Causation of Cancer and Its Curability with Radium" (this from the front page). "I have simplified the exposition of cancer . . . so that no error may creep in to divert my meaning. It is therefore within the province of every physician . . . to be able to have at least a well-defined reason for the cause and continuance of cancer, and the methods employed for its relief." "Radium has done more to relieve and eradicate cancer than all other remedies." "Where medicine is employed for the treatment of skin diseases [no qualifications anywhere as to the kind], radium is more effective . . . and requires less time to effect a cure." "In all the varieties of cancer, internal and external, the treatment calls for radium . . ." These sentences selected in five minutes give some idea of the author's restraint. Thirty pages are given to what is called "the exposition of cancer and radium technic." This is in the form of a dialogue and constitutes as gross a piece of balderdash as it is easy to find. It is not instructive; it is not amusing; it is just stupid bombast. In our opinion the book is an offense to the already overtaxed subject of radium therapeutics.

LA GREFFE OVARIENNE: HISTORIQUE; RÉSULTATS CLINIQUES ET THÉRAPEUTIQUES. Par le Docteur Ivan Scheurer. Paper. Price, 4.50 francs. Pp. 182, with 9 illustrations. Paris: G. Steinheil, 2, rue Casimir-Delavigne, 1910.

This monograph of about 180 pages contains a historical review of the experimental work done on animals on the grafting of ovaries, together with the work done by others on the grafting or transplanting of ovaries in the human subject. This part of the subject occupies about 133 pages and is quite complete. Following is a detailed report of the results of the work of Professor Tuffier on the grafting of ovaries in the human subject at the Beaujon Hospital. At the present time Tuffier has had more experience in the grafting of ovaries in women than perhaps any other surgeon and his results demonstrate beyond doubt that the ovary may be successfully grafted. Not only has menstruation become reestablished in women with grafted ovaries but pregnancy has taken place. The ovary has been successfully grafted on the peritoneum near its normal site, on the psoas muscle retroperitoneally, in the cornua of the uterus, in the Fallopian tube, in the subcutaneous tissue of the abdominal wall and in the subperitoneal connective tissue. Success, therefore, does not depend on the location. Tuffier has successfully grafted ovaries that have been kept in cold storage for several days.

The monograph is an interesting one and contains many useful hints regarding the grafting of organs and their subsequent behavior.

DIE RÖNTGENTHERAPIE IN DER DERMATOLOGIE. Von Dr. Frank Shcultz, Privatdozent, Oberarzt der Abteilung für Lichtbehandlung and der Kgl. Universitätspoliklinik fü Hautkrankheiten zu Berlin. Paper. Price, 6 marks. Pp. 143, with 130 illustrations. Berlin: Julius Springer, 1910.

This monograph gives an excellent statement of the present position of Roentgentherapy in dermatology. The author devotes the first 40 pages to a consideration of technic and apparatus. This is a valuable part of the book, because a

satisfactory and not overburdened description of the present day technic and apparatus of *x*-ray therapy is difficult to find. The remaining 100 pages are given to therapeutics, 40 pages to general therapy and the remaining 60 to special therapy. Under special therapy the various dermatoses treated with *x*-rays are considered. The author considers the uses of *x*-rays in various dermatoses from the standpoint of one with large clinical experience, and his views are scientific and temperate. It is interesting to see him confirm again the findings of earlier conservative authors of the value of *x*-rays in dermatology. He gives a convincing summary of the usefulness of *x*-rays in various dermatoses, fortifying his statements with many beautiful reproductions of photographs. These are striking proof of the value of this agent when employed by one who is as well an expert in dermatology as in the use of *x*-rays. It is a valuable addition to the literature of a subject which at present is being undervalued. It well deserves translation and publication in English.

HANDBUCH DER GESAMTEN MEDIZINISCHEN ANWENDUNGEN DER ELEKTRIZITÄT einschliesslich der Röntgenlehre. Herausgegeben von Prof. Dr. med. H. Boruttau, Privatdozent für Physiologie an der Universität Berlin, und Prof. Dr. med. L. Mann, Privatdozent für Nervenheilkunde an der Universität Breslau. Band I. Paper. Pp. 599, with illustrations. Leipzig: Dr. Werner Klinkhardt, 1909.

In the first volume of this work, which is to consist of three volumes, is found a very elaborate presentation of the physics and physiochemics of electricity. The various devices, both chemical and mechanical, for the generation of electricity are described in detail as well as all accessory devices such as galvanometers, interrupters, rheostats, commutators, etc. The difference in the physical and chemical properties of the various electric currents such as the direct, alternating, and induced, etc., are explained, following which is an interesting chapter on electro-physiology. A chapter on electropathology or the injurious effects of electricity as seen in lightning stroke or contact with strong industrial currents closes this volume.

The use of electricity is increasing so rapidly and the harmful effects of the strong currents found in the industries are manifested in such a variety of ways that it is necessary for every physician to be familiar with these harmful effects even though he does not make use of electricity as a therapeutic agent. The subject is so important that it would be well if this work were translated so that those who are unable to read it in the original might become familiar with its contents.

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## *Medicolegal*

### Responsibility for Gauze Left in Kidney Cavity—Obligations of Surgeon—Evidence of Local Custom Excluded—Surgeons Not Liable for Negligence of Hospital Nurses and Interns

The United States Circuit Court of Appeals, Seventh Circuit, says that Harris vs. Fall (177 Fed. R. 79), was an action for alleged malpractice brought by the latter party, a resident of Ohio, who authorized his local physician to correspond with the defendant, a Chicago surgeon, with reference to performing an operation, which it was arranged should be performed in a Chicago hospital. The operation was for stone in the right ureter, but none was found, and a subsequent operation was performed wherein the right kidney was removed. The suit arose out of the latter operation and ensuing treatment of the wound, as at some stage of treatment a band of gauze used therein was deposited and left in the kidney cavity, causing serious disturbance until removed long afterwards through another operation.

In reference to the treatment, the defendant testified that he used fabrics to clean out the wound, but left nothing in the wound when finished; that he then packed with drainage, by inserting successively strips of gauze, by means of an instrument, with the strips reaching the bottom of the cavity, the next two inches further up, and so graduating their locations;.that he thus put in five or six strips—making no count or record of the exact number—each strip for such use being seven or eight inches wide and a yard long; that the outer end of each strip was held in a clamp during the process and each remained outside the wound, for removal at the next dressing; that he then sewed up the wound, leaving an opening for packing two to two and one-half inches in length, and then put on the outside dressing.

The patient remained at the hospital some seven weeks after the second operation, under the charge of the defendant, who made frequent examinations of wound and dressings, and on occasions attended to the dressing. Generally, however, one or another of two interns of the hospital attended to the packing and dressing under instructions given them by the defendant.

There was no question but that the defendant was of excellent repute for skill in surgery, and that the removal of the kidney was skillfully performed. But in undertaking this professional work, the obligation was incurred by him to exercise throughout the performance of his engagement both "the ordinary care and skill of his profession, in the light of modern advancement and learning on the subject," and his own best ability, skill, and care. That the facts stated, therefore, established a case of malpractice and serious injury, well within the rule, if the defendant was responsible for the leaving of the gauze in the kidney cavity, was unquestionable.

There was no error in the exclusion of testimony offered by the defendant to show "that at the time and place of the treatment by defendant of plaintiff it was the custom of reasonably careful" surgeons in treating similar cases to leave the "subsequent care of patients in the matter of dressing, packing, and unpacking of such wounds to the house doctor." In each form of tender the proof of custom was thus limited either to Chicago or to the hospital in question—not a general custom. The rule is elementary that such local custom cannot enter into the contract made with a stranger to locality and custom without evidence tending to show notice, and, no offer appearing to prove that either the plaintiff or his Ohio physician, who represented him in the arrangement, was familiar with the alleged local custom, the exclusion of the offered evidence was proper.

The trial resulted in a judgment in favor of the plaintiff for $4,000 damages, but that is reversed, and a new trial ordered, on account of error in an instruction given the jury that: "The defendant has claimed that even though plaintiff did carry the gauze from Chicago in his body when he left here in March that the defendant is not to be held responsible for that, unless it appears that the defendant was responsible for allowing the plaintiff to go away from here with the gauze in his body as distinguished from the house surgeon, who the testimony shows participated in the treatment and care of the plaintiff during his entire stay at the hospital. But on that question I charge you as a matter of law that the defendant in this case cannot defend himself by saying that what was negligently done to this plaintiff, if negligence there was, is attributable to some one or more of the house surgeons at the hospital. It was his case, and he must discharge his obligation to the plaintiff under the facts in this case as if he had no house physician associated with, or participating with, him in the care and treatment of this plaintiff."

Support for this instruction rested on this proposition: That the engagement of the defendant, under the circumstances in evidence, conclusively implied his obligation, not only to perform and complete the operation—which, as defined in Akridge vs. Noble, 114 Ga. 949, "begins when the opening is made into the body and ends when this opening has been closed in a proper way after all appliances necessary to the successful operation have been removed from the body"—but to attend, either personally to all care, dressings and treatment required, or employ professional assistants therefor, until recovery or discharge from such care. The court believes that no such undertaking on the part of the defendant can reasonably be presumed under the evidence, and that it is without sanction under any authority called to attention. The proposition ignored these potent facts: The patient

entered the hospital, contracted there for his room and accommodations, and received care and treatment from its nurses and house physicians throughout his stay, for which he made weekly payments, and the hospital was incorporated for general hospital purposes, under management of a board of trustees, was neither owned nor controlled by the defendant, nor were the house physicians selected or engaged by him, or within his control, except as their services were tendered as a part of the hospital service.

The court believes, moreover, that proof of a local custom in respect of such hospital service was not needful; that the general custom of incorporated general hospitals in like localities, to furnish like service, and of reliance thereon by an independent operating surgeon and by patients therein for the usual care and after-treatment incidental to an operation, are matters within common knowledge and entitled to notice accordingly. In Baker vs. Wentworth, 155 Mass. 338, this custom in respect of nurses is recognized, and the operating surgeon held exempt from liability for negligence of the nurses, although the patient supposed (in the absence of representations) that the hospital was owned by the surgeon; and in Perionowski vs. Freeman, 4 Foster & F. 977, Chief Justice Cockburn remarked on the practice (there proven) of surgeons leaving care of their patients in various details to the hospital nurses that such practice was "indispensable," and the operating surgeon was not liable for their negligence.

So, these hospital attendants, known as "interns" (usually young physicians), are furnished at the general hospitals to attend to the ordinary work of dressing and treating the wound (left by an operation) on the way to recovery; and the mere undertaking of the surgeon to operate, under call or engagement therefore, cannot, as the court believes, imply his further personal undertaking for the ordinary details of after-treatment, to make the doctrine of respondeat superior (let the superior answer; the principal or master must answer, or is responsible, for the acts of his agent or servant) applicable, to charge him for fault or negligence on the part of such hospital attendants, neither known nor discoverable by the surgeon in the exercise of care and skill throughout his engagement.

No doubt is entertainable, however, that the professional undertaking in this case extended as well to the subsequent visits, observations, and personal treatment in evidence with the attendant obligation for the exercise of skill and care therein.

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# *Current Medical Literature*

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### Medical Record, New York

*September 10*

1 Contribution of Ignatz Philip Semmelweis to Modern Medicine. R. C. Newton, Montclair, N. J.
2 Etiology of Prostatic Hypertrophy. E. G. Ballinger, Atlanta, Ga.
3 The Anti-Tuberculosis Propaganda. J. B. Huber, New York.
4 Acute Inflammations of the Middle Ear and Their Treatment. M. D. Lederman, New York.
5 Hospital Noise. H. A. Royce, Kingston, Ont., Canada.
6 *The Catching Cold Phobia. W. Brady, Elmira, N. Y.
7 Treatment of Pellagra. G. M. Niles, Atlanta, Ga.

6. **Catching Cold Phobia.**—Laying aside unfounded traditions and depending solely on our present knowledge, Brady says that it may be confidently affirmed that the vulgarly listed causes of respiratory disease, such as cold, dampness, exposure, wet feet, and draughts, are, for all practical purposes, entirely negligible factors, and the only precaution necessary against them is the effort to secure bodily comfort, which is purely instinctive, though very commonly misguided. Cold has no demonstrable etiologic relation with respiratory disease. Clean draughts are not only harmless, but salutary, being requisite for perfect ventilation. The phrase "catching cold" is meaningless, misleading, undignified and obsolete. The groundless fear of cold, fostered by the abuse of this misleading phrase, constitutes, he declares, a form of hysteria that opposes and embarrasses earnest therapeutic measures. So far as we now know, the true predisposing factors of the various respiratory diseases (acute and chronic) are dietetic sins, unhygienic clothing, overheated apartments and defective ventilation. Prophylaxis, therefore, consists in directing intelligently man's instinctive effort to secure bodily comfort, together with reasonable isolation of every case of respiratory disease.

### Boston Medical and Surgical Journal

*September 8*

8 Indications for Abdominal Hysterectomy. W. P. Graves, Boston.
9 *Acute Pancreatitis. F. G. Balch and G. G. Smith, Boston.
10 *Surgery of the Vascular System. J. C. Hubbard, Boston.
11 *Disease of the Maxillary Antrum. J. P. Clark, Boston.
12 *Certain Aspects of the Bacteriology of Bacillary Dysentery. A. I. Kendall, Boston.

9. **Acute Pancreatitis.**—From the literature and the cases which the authors have looked up they conclude that almost all the acute diseases of the pancreas begin as an acute hemorrhagic inflammation, accompanied usually by free fluid in the peritoneal cavity and by disseminated fat necrosis. Operation is the treatment indicated, unless the patient is in such severe collapse that the additional shock would surely be fatal. The object of operation is to drain the pancreatic secretion and the products of infection; this is best done by incising the tissue of the gland, as advised by Porter, and by carrying the drainage through the gastrohepatic omentum close above the lesser curvature of the stomach. They report in detail 16 cases of acute hemorrhagic pancreatitis and 2 cases of suppurative pancreatitis.

10. **Surgery of the Vascular System.**—Hubbard believes that it may be fairly said that direct transfusion of blood is now a recognized method of treatment in hemorrhage and shock, and in hemorrhagic disease of the new-born; that it is perhaps of benefit in some cases of eclampsia and illuminating gas poisoning, and perhaps in hemophilia, and as a means of improving the condition of a feeble patient to such a point that an operation may be undertaken.

11. **Disease of the Maxillary Antrum.**—These were cases of what Clark says might very appropriately be called "mucous" disease of the antrum. They were characterized by the presence of a thick, viscid, tenacious mucus in the antrum with an apparently unusually large ostium maxillare. The vasomotor symptoms were prominent.

12. **The Bacteriology of Bacillary Dysentery.**—Kendall presents briefly certain facts concerning the bacteriology and biochemistry of the dysentery bacillus and associated intestinal flora in bacillary dysentery, with the fundamental principles relating to their activity in the alimentary canal, and mentions the procedures which are theoretically logical for the restoration of a normal intestinal flora. The bacterial flora of the intestinal tract in cases of bacillary dysentery, he says, is putrefactive, chemically speaking, because, as a rule, there is little or no sugar present in the intestinal tract of the body for them to act on. This is equally true for those organisms which succeed in penetrating into the body itself, since the small amounts of dextrose normally present in the blood are usually metabolized early in the disease, particularly under a starvation diet. The remedy for this condition, from the standpoint of bacteriology, is to add an excess of sugar which can be utilized by the bacteria within the intestinal tract and to restore to normal the amount of dextrose in the blood, so that even those organisms which have succeeded in penetrating within the body itself may have an opportunity to act upon sugar rather than on the nitrogen of the tissues of the body.

Dextrose infusions (25 per cent. chemically pure dextrose in normal saline solution) tend to restore this normal dextrose, and also to furnish the body with a considerable amount of fluid. Feeding lactose by mouth (5 per cent. solution) brings about a similar change in the chemistry of the intestinal bacteria.

### New York Medical Journal

*September 10*

13 Social Plagues and the Public Schools. I. S. Wile, New York.
14 A Universal *X*-Ray Frame. A. Granger, New Orleans.
15 *Pustular Typhoid Roseola. C. Eggleston, New York.
16 *Treatment of Pulmonary Tuberculosis by Immobilization of Portions of the Trunk. B. G. R. Williams, Paris, Ill.
17 Osteomyelitis of the Temporal Bone. E. Amberg, Detroit.

18 Functional Exercises in Some Nervous Diseases. W. Burdick, Philadelphia.
19 Fatal Case of Toxic Pyelitis in Infancy. S. Neuhof, New York.
20 Treatment of Pulmonary Tuberculosis. T. Y. Hull, San Antonio, Texas.

15. **Pustular Typhoid Roseola.**—On the abdomen and lower anterior portion of the chest of Eggleston's patient there were from 12 to 15, or more, "spots." The majority was small, about 2 or 3 mm. across, rose-red, maculopapular, fading on pressure, and typical typhoid rose spots. Several were somewhat larger and were capped with small vesicles, containing a clear fluid. Two or 3 were very large; each from 10 to 12 mm. in diameter and deep rose-red at the base, which was infiltrated and somewhat elevated, forming a distinct areola about a central yellow pustule. These pustules were tender on direct pressure. They bore no relation to the hair follicles. The vesicles and pustules closely resembled those of variola and varicella. They were, however, somewhat larger and at no time umbilicated. The ninth day of the disease 3 new typical rose spots were observed. A number more appeared on each of the 2 succeeding days. The rose spots, in several instances, became capped with vesicles shortly after their appearance. Some remained vesicular, but a few rapidly went on to form pustules similar to those already described. No new spots appeared after the twelfth day of the disease. The entire eruption was closely confined to the front of the body from the lower chest to the groins. There was no lymphadenitis associated with the pustulation. Those which remained typical rose spots faded in the customary 2 and 3 days after their appearance. The vesicles dried up and were gone in 4 or 5 more days. The pustules disappeared slowly, requiring from 10 to 14 days for resorption. Two of the large ones were opened and the pus expressed. The pus was a very thick, stringy, yellow material, unlike ordinary staphylococcus pus in gross appearance. Smears showed a few leukocytes and pus cells, many threads of mucus, and a few unidentified bacteria. Cultures made from the pus developed a pure growth of the *Staphylococcus aureus*. The patient was noticeably clean and free from any form of skin disease such as acne or parasites. No bathing or hydrotherapy was used in the treatment. The only drug employed was liquor ammonii acetatis. The course of the disease in general was very mild. Only 4 similar cases were found recorded in the literature by Eggleston.

16. **Partial Immobilization of Trunk.**—Williams proposes to immobolize certain parts of the chest for certain periods during the day in the treatment of pulmonary tuberculosis. Although he has used continuous immobilization in some cases for periods of several days, he prefers to run no risks of weakening the sound lung by over-endeavor. He has found it of advantage in many cases, therefore, to apply temporary immobilization, i. e., during certain hours only, these depending on many conditions—stage of the disease, weather conditions, etc. Although he hesitates to lay down rules, he believes that the forenoon is usually the best time for the immobilization. In attempting temporary immobilization of portions of the chest with adhesive plaster there arise at once serious questions of expense in using so many plasters, and the time and trouble spent in their application and removal. To obviate these difficulties he has devised the lacing method. Here the plasters are left in position, being tightened by lacing during certain hours. It is scarcely necessary to state that lacing should be done after a forced expiration, and that enough room should be left between the edges to provide for tight lacing. When any degree of permanency is desired, he prefers strong ticking or canvas. Williams has at present a number of patients under observation, some of whom have been under observation for many months, and though several have been dismissed from active treatment none has been pronounced cured. On some he has applied temporary or permanent half corsets and on others the abdominal binder. He uses hygienic and medical treatment in each case.

### Lancet-Clinic, Cincinnati

*September 10*

21 Bronchopneumonia. F. A. Kantz, Cincinnati.
22 Pistol-Shot Wound of the Brain. A. H. Barkley, Lexington, Ky.

### Virginia Medical Semi-Monthly, Richmond

*August 26*

23 Poliomyelitis—Misconceptions About Treatment. T. A. Williams, Washington, D. C.
24 What Can be Done for Relief of Urinary Discomforts of Elderly Men? R. C. Bryan, Richmond.
25 Vasectomy for the Defective Negro with His Consent. B. Barrow, Barrow's Store.
26 Congenital Hypertrophic Stenosis of the Pylorus. E. P. Copeland, Washington, D. C.

### Medical Fortnightly, St. Louis

*August 25*

27 Physical and Psychical Effects of Hydrotherapy. G. F. Butler, Chicago.
28 Personal Experience in Treatment of Venereal Disease. J. D. Sheba, Bland, Mo.

### Journal of the Michigan State Medical Society, Battle Creek

*September*

29 *Experiments in Intestinal Anastomosis. C. Georg, Ann Arbor.
30 Practical Considerations of Crossed Eye and Other Muscular Eye Troubles. F. J. Bernstein, Kalamazoo.
31 Cancer of the Penis and Extirpation of the Organ with Perineal Transplantation of the Urethra. S. R. C. Graves, Grand Rapids.
32 Holoacardius Acephalus. A. E. Budde, Norway.
33 Diagnosis of Abdominal Tumors. H. E. Randall, Flint.

29. **Intestinal Anastomosis.**—The results of experiments by Georg which have extended over a period of two years, have convinced him that the method of Parker and Kerr is the most practical for end-to-end anastomosis and that of Copek for lateral anastomosis and gastro-enterostomy.

### Journal Tennessee State Medical Association, Nashville

*August*

34 *Pellagra. J. A. Sewell, Rockwood.
35 *Amebiasis. J. L. Jelks, Memphis.
36 *Trifacial Neuralgia. W. T. Swink, Milan.
37 The Subinvoluted Uterus. W. G. Bogart, Chattanooga.

34. Abstracted in THE JOURNAL, April 23, 1910, p. 1400.

35, 36.—Abstracted in THE JOURNAL, April 30, 1910, p. 1465, 1466.

### Journal South Carolina Medical Association, Charleston

*July*

38 Serotherapy of Epidemic Cerebrospinal Meningitis. C. H. Dunn, Boston.
39 Early Symptoms and Early Diagnosis of Uterine Carcinoma. C. F. Ross, Anderson.
40 *Uncinariasis in the Negro. W. J. Burdell, Lugoff.
41 Increase of Blindness. C. W. Kollock, Charleston, S. C.
42 Gastric and Duodenal Ulcers in Contradistinction to Their Sequelæ. A. B. Knowlton, Columbia.

40. Abstracted in THE JOURNAL, May 28, 1910, p. 1876.

### Interstate Medical Journal, St. Louis

*September*

43 Theory, Methods and Psychotherapeutic Value of Psycho-Analysis. William A. White, Washington, D. C.
44 Indications for and a New Technic Pertaining to the Operations of Cecostomy and Appendicostomy in Treatment of Intestinal Lesions. S. G. Gant, New York.
45 Factors that Shape the Successful Treatment of Nervous Diseases. J. Collins, New York.
46 Paget's Disease of the Nipple. E. Jonas, St. Louis.
47 *Operation for Cystocele: An Improved Method. D. T. Gilliam, Columbus, Ohio.

47. **Cystocele.**—Gilliam has slightly modified his original operation as follows: (1) an oval denudation of the most prominent part of the cystocele as in the old time operation; (2) dissecting flaps from the vaginal wall on either side of the denuded area with which to cover the latter; (3) bringing the flaps together over the denuded area and suturing them to it and to each other. The result is that the cystocele is effaced, and the site of the cystocele is strengthened by an additional layer of fascia—that taken from the sides of the vaginal wall.

### Alabama Medical Journal, Birmingham

*August*

48 The Toxemia of Pregnancy. C. B. Jackson, Jasper.
49 Relation of the Medical Profession to the Practice of Optometry. J. F. Orr, Edinburgh.

### Annals of Surgery, New York

*September*

50 *Symptomatology and Surgical Treatment of Spinal Cord Tumors. J. R. Hunt and G. Woolsey, New York.
51 *Intestinal Lesions Produced by Blunt Force. H. B. Stone, Charlottesville, Va.

52 *Transgastric Jejunal Feeding. A. Schwyzer, St. Paul, Minn.
53 *Proposed Fistulo-Enterostomy of von Stubenrauch. W. S. Sutton, Kansas City, Mo.
54 *Permanent Colostomy. H. Lilienthal, New York.
55 Myeloma of the Long Bones. F. S. Mathews, New York.

50. **Spinal-Cord Tumors.**—The series of cases forming the basis of this paper represents Hunt's clinical experience in this field during the past 10 years. Thirteen cases in all are recorded, of which 6 were extramedullary neoplasms. Of this latter group, one patient died as the result of the operative procedure; one survived the operation for nearly a year, the growth eventually recurring; and the 4 remaining cases may be regarded as successful, all the patients making fair recoveries from their paralysis and after a considerable lapse of time showing no symptoms of recurrence. In 5 other cases, an exploratory laminectomy was performed, but the nature of localization of the growth precluded removal. In a recent case of intramedullary tumor of the cervical region, an exploratory operation was performed and the cord was punctured, with the evacuation of 2 drams of cystic fluid. Of the remaining 2 cases, the diagnosis was confirmed at autopsy, and these are included as contribution to the symptomatology of the subject. Hunt says that the differential diagnosis of intramedullary and extramedullary growths is often so difficult that in many cases it is impossible to reach a definite conclusion. As the extramedullary tumor alone offers the hope of successful extirpation, the recognition of this group is most important. But here again, when the clinician is in doubt, exploration is indicated and should be undertaken before the disease has progressed too far. Hunt has more than once had occasion to witness exploratory laminectomy in doubtful cases, in which, even if the tumor could have been removed, the cord was already irretrievably damaged. The clinical picture of intramedullary tumor resembles somewhat that of a subacute or chronic transverse myelitis. The tendency to extension of the symptoms in an upward direction is frequently observed, and is another distinguishing feature from growths without the cord. In extramedullary neoplasms, on the other hand, the course of the affection suggests that the tumor is growing in width and not increasing in length. In central tumors (gliosis and glioma), vasomotor and trophic disturbances are of frequent occurrence, as well as spinal deformity without pain or tenderness (kyphoscoliosis). Very characteristic also is a homolateral dissociated anesthesia of segmental distribution (posterior horn anesthesia). In extramedullary growths, root pains and root anesthesia are present on the side of the tumor and a contralateral anesthesia below the level of the lesion. A dissociated anesthesia (loss of pain and temperature sense) cannot be regarded as characteristic of central tumors, and may be encountered in verteral and extramedullary localizations as well. Hunt has observed, however, that the tactile sense, under these circumstances while present, is definitely obtunded when compared with a normal area, which in some cases serves to separate this form of sensory disturbance from the dissociated anesthesia of the syringomyelitic type. He emphasizes a symptom which he has repeatedly observed in cases of extramedullary tumor in the cervical region. This consists of a distinct girdle sensation, or constriction, situated at the umbilical level or in the lower thoracic zones.

51. **Intestinal Lesions Produced by Blunt Force.**—According to Stone, these accidents are most frequently encountered in males during youth and early manhood, and in females during childhood, these of course being the periods of greatest exposure to trauma from the habits of life. Preëxisting lesions, such as hernias, ulcers, adhesions, etc., increase the liability of rupture should trauma occur. Lax abdominal muscles afford less protection than a wall which is contracted, and hence very sudden accidents are more frequently the cause of visceral lesion than those in which the patient has some warning. All parts of the gastro-intestinal tract have been injured, to say nothing of the other abdominal viscera, but the ileum and jejunum are more often involved, the colon and stomach less frequently. Thus in 219 cases, the small intestine was affected 172 times, the large 26 times and the stomach only 21 times. Lesions may be multiple, or may be associated with rupture of other organs. Stone is inclined to feel that vomiting is apt to arise sooner if the lesion be above the level of the umbilicus than if it be below.

52. **Transgastric Jejunal Feeding.**—Schwyzer cites a case of severest gastric ulcer, in which he combined a gastro-enterostomy with gastrostomy, and passed a gastrostomy tube through the opening in the anterior wall of the stomach and across the stomach through the gastro-enterostomy opening some distance into the jejunum. By the use of a rather large Murphy button a rubber catheter could be passed through its opening into the lower arm of the jejunal loop, and since this catheter would nearly but not tightly fill the lumen of the button, the tendency would be to retain the infused food in the intestine, though some drainage was possible along the tube and through the side walls of the button for the gastric and other regurgitated secretions. In accordance with these purposes, the wound was reopened. The omentum again seemed to be down in the pelvis. It was raised up, and with as little eventration as possible, the first part of the jejunum was secured and an antero-inferior gastro-enterostomy was done, the smaller half of the button being inserted into the stomach. Then a good distance from the gastro-enterostomy opening, a tiny opening was made into the stomach wall, just enough to make it possible to force a soft rubber catheter through, which was, however, rigid enough so as not to double up too easily, and thus not to have its jejunal end eventually expelled back into the stomach by the collection of a greater quantity of food in the intestine. This catheter was then brought out through the gastric half of the button, then inserted into the lower half, and the button closed. The catheter was pushed in far enough to reach about 10 or 12 cm. beyond the button into the lower loop of the jejenum. The button seemed a little large for the intestine, and therefore in order to support the line of union a continuous silk Lembert suture was applied over the two anterior thirds of the circumference. Two silk pucker-strings inverted the stomach walls around the catheter, the inner one catching the catheter, the outer one being fixed to the fascia of the abdominal walls, which were now closed by figure of 8 silkworm sutures. The patient eventually made a complete recovery.

53. **Fistulo-Enterostomy.**—Sutton reports what he claims to be the first instance in the human being where the proposed fistulo-enterostomy of von Subenrauch was carried out successfully. This procedure uses a diverted segment of intestine as a canal to carry the discharge from a billary fistula back into the intestinal tract.

54. **Permanent Colostomy.**—Lilienthal says that he has been performing an operation which obviates nearly all the discomfort and filthiness of colostomy. The patients have absolute control of the bowels and can even hold a considerable quantity of fluid injected into the colon. The bowels move once or twice a day, the patient knows when the movements are about to occur and—not by any means the least advantage—he is not annoyed by the necessity for wearing an appliance for obturation. The operation has been tested many times and the patients have been for the most part carefully followed up. The sigmoid is brought through the rectus muscle and twisted on its axis. Thus two sphincters were secured—one at the twist and one at the point of peritoneal fixation. For detailed description of the operation the original article must be consulted.

### Wisconsin Medical Journal, Milwaukee

*August*

56 *Medical and Surgical Aspects of Tumors, Including Inflammatory and Neoplastic Formations. J. C. Bloodgood, Baltimore.
57 The Pure Milk Question in Country Districts. B. D. Baird, Galesburg, Ill.
58 Medical Inspection of Schools of Milwaukee. G. P. Barth, Milwaukee.

56. Abstracted in THE JOURNAL, July 23, 1910, p. 344.

### New Orleans Medical and Surgical Journal

*September*

59 Chronic or Recurring Diarrheas, Their Diagnosis and Treatment. J. T. Halsey, New Orleans.
60 *The "*Methode Origenee*"—Oxygen as an Antiseptic. A Delcourt, Houma, La.

61 Injuries to Nerves of the Upper Extremity. E. M. Hummel, New Orleans.
62 Treatment of Compound Fracture of Femur and Leg. L. Sexton, New Orleans.
63 Primary Carcinoma of the Body of the Uterus. M. A. Shlenker, New Orleans.

60. **Oxygen as an Antiseptic.**—The conclusion is drawn by Delcourt that a mixture of oxygen and peroxid of hydrogen is an antiseptic and an antibactericide of first order, superior to those actually used, having no odor and no toxicity. It is specially powerful and specific against infection produced by anaerobic bacteria, and represents our best, and very likely our only, efficacious weapon against gaseous gangrene. It is moreover, a most precious and harmless agent against common suppuration and ordinary infections, irrespective of the offending bacteria. Most of all, those common infections of the skin, be they streptococcus or staphylococcus, vanish as if by magic, before a few peroxid of hydrogen applications.

### Journal Indiana State Medical Association, Fort Wayne

*August*

64 The Inter-Relationship of Gall-Stone Disease and Appendicitis. F. W. Foxworthy, Indianapolis.
65 Cyclic Vomiting in Children. C. G. Beall, Fort Wayne.
66 Angioneurotic Edema. H. O. Bruggeman, Fort Wayne.
67 Sketches of the Medical History of Indiana (continued). G. W. H. Kemper, Muncie.
68 Importance of Stomach Lavage for Removal of Blood Swallowed During Operations. J. R. Eastman, Indianapolis.

### Albany Medical Annals

*September*

69 *Early Diagnosis of Pulmonary Tuberculosis. A. H. Garvin, Raybrook, N. Y.
70 *Alcoholic Psychoses. R. E. Doran, Willard, N. Y.
71 The Albany Guild for the Care of the Sick. S. L. Dawes, Albany.

69. **Diagnosis of Pulmonary Tuberculosis.**—Three points are emphasized by Garvin in the early diagnosis of the disease. The first is the insidious onset. The second point is the most important physical procedure in the diagnosis, which is auscultated cough. A lung examination which does not necessitate the patient's coughing is not a complete examination, for a case with definite signs will be passed over and marked as negative if this is forgotten. The suspected area can be re-examined again and again during the physical examination in an attempt to develop the suspected signs. Third, the most important working rule for the general practitioner in the fight against this disease is family examination. In 4,500 new cases of pulmonary tuberculosis that applied for treatment at the public clinics in Berlin, under the direction of Dr. Kaiserling, the families of these 4,500 new cases were systematically examined for a discovery of concealed and unknown cases, and as the result of this systematic family examination in these 4,500 cases, 4,500 additional cases of unknown tuberculosis were discovered, many of the patients being in an early and favorable stage for treatment, while many had gone on insidiously and were concealed and unknown bacilli bearers, even to themselves.

70. **Alcoholic Psychoses.**—Doran endeavors to show that while alcohol is a factor in the production of insanity, it is only one of many, and that even in the forms of insanity commonly considered as due to alcohol, every factor must be given due weight. The exact bearing of alcoholism on the development of insanity is not yet known. He believes, however, that alcohol is more potent in filling poorhouses and penal institutions than asylums, and physicians should do all in their power to educate the people on the possibility of danger in this direction. Certainly they should discourage drinking among those who are hereditarily predisposed, or among the weak-minded and epileptic, because they know that in such cases alcohol is truly a poison and frequently converts such people into dangerous and unsocial lunatics.

### Woman's Medical Journal, Cincinnati

*August*

72 Preventive Medicine. L. L. Meanes, Des Moines, Iowa.
73 Hemorrhage. J. Mendenhall, Des Moines, Iowa.
74 Toxemia and Eclampsia. F. Sherbon, Colfax, Iowa.
75 The Physician's Oppertunity. A. V. Holmes, Omaha, Neb.
76 Instrumental Interference in Obstetrics. E. Peo, Boone, Iowa.

### Journal of Experimental Medicine, New York

*September*

77 Effect of Various Agents on the Blood Flow Through the Coronary Arteries and Veins. G. S. Bond, Baltimore.
78 Resemblance Between Anaphylactic Intoxication and Poisoning with Witte's Pepton. A. D. Hirschfelder, Baltimore.
79 *Immunity in Cancers of the White Rat. I. Levin, New York.
80 *Relation of Fatty Degeneration to Oxidation of Purins by Liver Cells. H. G. Wells, Chicago.
81 Experimental Yaws in Monkey and Rabbit. H. J. Nichols, New York.
82 Changes in the Hemosiderin Content of the Rabbit's Liver During Autolysis. W. H. Brown, Madison, Wis.
83 Effect of Vagus Section on Anaphylaxis in Guinea-Pigs. J. Auer, New York.
84 *Cultivation of the Leprosy Bacillus and Experimental Production of Leprosy in the Japanese Dancing Mouse. C. W. Duval, New Orleans.
85 Intracellular Proteolytic Enzymes of Liver. A. R. Dochez, New York.
86 Cell Changes in Amaurotic Family Idiocy. B. Sachs and I. Strauss, New York.
87 A Transmissible Avian Neoplasm (Sarcoma of the Common Fowl). P. Rous, New York.

79. **Immunity in Cancers of White Rat.**—Forty rats were treated by Levin for 6 weeks, by hypodermic injections of 1 c.c. of 4 per cent. solution of arsazetin, first every 2 days and then every 4 days. Three weeks after the beginning of the treatment the tumor was inoculated. The arsazetin had no influence on the growth of the tumor, though the quantity of the drug was sufficient to impair considerably the general health of the animals. In nearly every animal a condition was created similar to the state of a waltzing mouse. Another series of animals was treated with autolyzed tissue. The organ for immunization was the liver of "Nullers," that is, rats naturally resistant to tumor implantation. The tissue was kept under aseptic precautions at body temperature for two weeks, then the autolyzed tissue was mixed with about double the quantity of normal salt solution, ground thoroughly with sand, filtered, and 1 c.c. of the solution injected subcutaneously. The results compare favorably with those of the investigators who induced immunity with normal tissue. Thus it seems possible to produce in rats a certain amount of resistance to growth of tumor by treatment with tissue of which the cells are killed, but the endocellular ferments apparently remain active. It is interesting to note here that autolyzed liver tissue seems to immunize equally well, whether used before or after the inoculation of the tumor, which fact may be of importance in view of the possibility that the resisting influence of the host may be of two kinds, one to the tumor implantation, the other to tumor growth. Another method consisted in ligating all the vessels of the spleen and from 4 to 12 days after the operation the tumor was inoculated. In another experiment the operation was done 9 days after the inoculation. The results show that the immunizing influence of such a ligated spleen is not so strong as the influence of autolyzed liver injected subcutaneously, and also that this immunizing influence is exerted only on the grafting of the tumor and not on its continued growth. The action of the ligated spleen is probably comparatively weak on account of the rapid absorption of the organ, which prevents the autolysis, and, indeed, no traces of such a spleen were found in the abdominal cavity two days after the operation. A third series of experiments was undertaken which consisted in the subcutaneous inoculation into a rat, of the normal skin and spleen tissue of a mouse, followed in a few days by a subcutaneous inoculation of the tumor. The aim of this treatment was to accustom the tumor cells to mouse tissue and then to observe whether such a rat tumor, which had the opportunity to obtain during its growth the food supplied by the inoculated normal mouse tissue, would not grow more readily when subsequently inoculated into a mouse. The results of this investigation were negative, but the extremely interesting fact was observed that a certain number of the rats treated with mouse tissue appeared immune against growth of the rat sarcoma.

80. **Oxidation of Purins by Liver Cells.**—Wells' experiments show that it is possible, by proper use of hydrazin and phosphorus, to cause a high degree of fatty change in the liver with a minimum of necrosis, involving alike both peripheral and central portions of the lobule and thus eliminating the

"factor of safety" or residual normal cells. Nevertheless, it is found that such fatty liver tissue has not lost in the least its power to oxidize uric acid when acting on it *in vitro* with abundant air supply, nor is the power to oxidize xanthin to uric acid noticeably diminished. While these experiments merely prove that extreme fatty degeneration does not destroy or appreciably diminish the power of liver cells to oxidize uric acid and xanthin *in vitro*, yet they suggest that in general, fatty degeneration is probably not essentially incompatible with a high degree of metabolic activity by the affected cells. It is possible that in the living tissue functional activity may be decreased secondarily by fatty metamorphosis, as for example, by the enlarged fatty cells compressing the capillaries and reducing circulatory activity, or by modification or diffusion through the cell by the fat deposits, independently of any deleterious influence on the cellular enzymes themselves.

84. **Cultivation of Leprosy Bacillus.**—The medium on which Duval grew the lepra bacillus was prepared as follows: The rind was carefully removed from the fruit portion of fully matured green bananas, every precaution to avoid contamination being used, and large blocks of the fruit, after slanting one surface with a sharp knife, were introduced into suitable sterile glass cylinders provided at the bottom with cotton plugs saturated in sterile distilled water. These plugs served not only as support for the banana, but as a source of constant supply of moisture. Sterile 1 per cent. solutions of tryptophan, cystein (made from protein) and leucin were next prepared and a portion of each poured on and allowed to saturate the banana. These solutions were used separately and in varying combinations, in order to determine on which the *B. lepræ* would grow best or grow at all. Both the banana and agar, which was saturated in a 1 per cent. solution of cystein, proved an excellent medium for the artificial cultivation of the leprosy bacilli when incubated at from 32 to 35 degrees C. The maximum growth occurred at a temperature of 32 degrees C. Light seems to favor the growth of *B. lepræ;* cultures kept in a glass incubator regulated at 32 degrees C. grew more rapidly than those in the dark chamber under similar conditions. Multiplication began early in the transplants and visible growth developed in the form of small, glistening, white colonies in from 4 to 6 weeks. Growth also occurred on the banana and agar when a solution of cystein and tryptophan had been added. The fact that growth occurred on the protein-cystein medium, and not on the others except in the presence of it, shows very conclusively that *B. lepræ* utilizes the end-products of digestion and not the products of cell metabolism. At least it is reasonable to assume that this is the case, if deductions may be drawn from these experiments. Multiplication *in vitro* of an acid-fast organism was obtained from the transplanted leprosy tissue on the above mentioned media from four cases of leprosy which corresponded in every essential to the leprosy bacillus. Not only did the leprosy bacilli develop in the original cultures but they continued to grow in subcultures. That the artificial growth is *B. lepræ* there can be no doubt, as the morphologic and cultural features and the animal tests have clearly proved.

## St. Louis Medical Review

*August*

88 Amenorrhea. G. Gellhorn, St. Louis.
89 The Reflexes in Hysteria. T. A. Williams, Washington, D. C.
90 Vegetations and Condylomata. C. C. Vanderbeck, St. Louis.
91 Animal Therapy. J. Knott, Dublin, Ireland.
92 Complement Fixation. W. T. Burdick, St. Louis.
93 Spartein. H. H. Redfield, Chicago.
94 Laboratory Diagnosis. G. L. Servoss, Fairview, Nev.

## Journal of Cutaneous Diseases, New York

*August*

95 *Extramammary Paget's Disease; Case Occurring on Forearm, Associated with a Nevo-Carcinoma. M. B. Hartzell, Philadelphia.
96 Rhinoscleroma Cured by *X*-Ray Treatment. S. Pollitzer, New York.
97 Lupus Annularis. R. L. Sutton, Kansas City.
98 Larva Migrans. M. Haase, Memphis.
99 A Pipette Pump for Wassermann-Neisser-Bruck Serodiagnosis of Syphilis and General Laboratory Work. C. W. McMurtry, New York.

95. **Extramammary Paget's Disease.**—A man, aged 64, was referred to Hartzell on account of a cutaneous affection of the arm, presenting at the time of his first visit the following unusual clinical features: On the outer side of the left forearm, beginning a little above the elbow joint and extending downward, was a palm-sized, circumscribed, irregularly oval patch with a bright red surface, for the most part smooth, but in places slightly scaly, over which were scattered a few pea-sized erosions covered with yellowish crusts, and about the border and within the upper portion a number of flat, shot-sized nodules covered with brownish crusts. In the center of the upper margin of this patch was a rather superficial ulcer about an inch in diameter, with a slightly infiltrated border, covered with exuberant granulations over which were scattered a number of irregularly shaped islands of bluish-white epidermis. The subjective symptoms were trifling, consisting chiefly of moderate itching. The disease had lasted about 15 years, and had until recently, at least, been regarded by the patient and his physician as an eczema and had been treated as such, but with little success. Sections made from the margin of the ulcer presented the histologic features characteristic of a nevo-carcinoma. Sections made from the large patch surrounding the ulcer exhibited some interesting changes, most of them more or less characteristic of Paget's disease. Sections made from the nodule excised showed a sharply circumscribed acanthosis in which the cells were decidedly smaller than normal and had for the most part lost their prickles. The most striking feature of these sections, however, was the narrow, deeply stained band of fibrous tissue and flat cells with elongated and deeply stained nuclei which separated the epithelial mass from the corium beneath, and dipping into it at intervals produced a partial lobulation of it. So far as Hartzell is aware, this is the first reported case in which a nevo-carcinoma has been associated with anything resembling, even remotely, Paget's disease. Moreover, there was apparently a reversal of the usual sequence of events, since the history makes it probable that the carcinomatous degeneration of the nevus preceded the appearance of the Paget's disease.

## Journal of Advanced Therapeutics, New York

*August*

100 Resuscitation by Electric Currents of Subjects in a Condition of Apparent Death Caused by Chloroform, Ether, Electrocution, Drowning and Other Forms of Asphyxia. L. G. Robinovitch, Paris.
101 Electrostatic Effects in Arteriosclerosis. F. H. Morse, Boston.

## Southern Medical Journal, Nashville

*August*

102 Pure Milk as a Factor in Public Health. R. L. Jones, Nashville.
103 Diagnosis and Treatment of Intestinal Perforation with Report of Two Successful Cases. W. W. Battey, Augusta, Ga
104 *Cancer of the Breast. W. A. Bryan, Nashville.
105 The Anesthetist: A Specialist. C. O. Abernethy, Raleigh, N. C.
106 Some Difficulties in Gastric Diagnosis. W. H. Witt, Nashville.
107 *Inguinal Herniotomy with Special Reference to Cocain Anesthesia. P. DeWitt, Nashville.
108 *Diuretic Action of Spartein. W. de B. MacNider, Chapel Hill, N. C.
109 Tuberculous Meningitis. J. Overton, Nashville.
110 Psychoneuroses and the Doctor's Relations to the Public. False Assumption and Innuendos of Christian Scientists. T. A. Williams, Washington, D. C.
111 Uncinariasis in Tennessee. N. Evans, Nashville.

104. **Cancer of the Breast.**—The following classification of cases of breast cancer is made by Bryan:

1. Those cases which are seen early, accurately diagnosed by a competent pathologist as cancer. This class offers the best chance of permanent cure by radical surgery—from 50 to 81 per cent.

2. Those cases in which axillary involvement is observed, but without supraclavicular node enlargement. This class gives possibly 25 per cent. cures. Certainly some patients are cured, and the radical operation should be done. Of course, the smaller and fewer the lymph nodes enlarged in the axilla at the time of the operation, the better the chance of cure. The author does not think we are justified by the history of cancer of the breast in condemning all cases with axillary involvement to a hopeless prognosis.

3. Those patients who have ulcerated cancer, and who have infiltration of the pectoral muscles, will perhaps give a very small percentage of cures. This reduces the prognosis much more than enlargement of the axillary nodes does.

4. Those cases in which there is supraclavicular enlargement of the lymph nodes offer very little or no hope of permanent cure, but the limits of life are considerably extended by extirpation.

5. Patients with thoracic and abdominal infiltration (including the spread along lymph channels) and remote (blood) metastases are not curable by surgery, and are to be operated on only for pallia-

tive purposes, such as will add to the comfort of the patient and her attendants or reduce the probability of complications such as infection in the ulcerative cases, or avoid the loss of vitality by hemorrhage or the constant leakage of serum.

107. **Inguinal Herniotomy with Special Reference to Cocain Anesthesia.**—Dewitt's plea for cocain anesthesia is based on the following points:

1. Many patients are induced to submit to a cure who would not do so with general narcosis, and the anesthesia mortality is removed.
2. The integrity of the nerves is maintained, thus preventing muscle atrophy.
3. There is no vomiting, thus relieving strains on sutures and allowing early administration of food.
4. The danger of ether pneumonia is removed, and there is much less liability to renal insufficiency.
5. Every step in the operation is done with cocain that is carried out with general narcosis.

108. **The Diuretic Action of Spartein.**—MacNider found that an active preparation of spartein used in a sufficiently large dose produces a rise of general arterial pressure. Following the rise in blood pressure there is an increase in the output of urine, which is likely due to an increase of local blood pressure in the kidney. Following surgical procedures, where the amount of urine is greatly reduced, or where anuria has developed as a result of low general arterial pressure, the amount of urine may be increased and the anuria relieved, through the action of spartein on general blood-pressure, and indirectly on the local kidney-pressure, raising the latter and rendering the kidney functionally more active.

### Maryland Medical Journal, Baltimore

*September*

112 Prevention of Racial Deterioration and Degeneracy. L. F. Barker, Baltimore.
113 Pathology of Pellagra. C. W. G. Rohrer, Baltimore.

### Mississippi Medical Monthly, Vicksburg

*September*

114 What the Practitioner and the County Society May Do to Aid the Council on Pharmacy and Chemistry. R. M. Boyd, Houston.
115 Bismuth Paste in Empyema. J. H. Johnson, Brookhaven.
116 Laceration of the Cervix and Perineum: A Factor in Nervous Troubles of Women. T. H. Henry, Columbus.

### Southern California Practitioner, Los Angeles

*August*

117 Arteriosclerosis: Observations on Blood Pressure. B. Reed, Alhambra, Cal.
118 Similia Similibus Curantur. W. W. Watkins, Phoenix, Ariz.
119 The Los Angeles Health Department and the Milk Supply. C. F. Edson, Los Angeles.
120 Surgical Treatment of Ulcerative Perforation of the Hollow Viscera. A. S. Lobingier, Los Angeles.
121 Salivary Calculi. J. M. King, Los Angeles.

### West Virginia Medical Journal, Wheeling

*September*

122 Mental Influence Over the Bodily Functions. S. L. Jepson, Wheeling.
123 Poliomyelitis, Apropos of the Spread Southward of This Disease. T. A. Williams, Washington, D. C.
124 Treatment of Diphtheria. W. J. Judy, Kerens.
125 Spina Bifida—Report of a Case. J. E. Cannaday, Charleston.
126 *Nutmeg Poisoning. G. D. Lind, Johnstown.

126. **Nutmeg Poisoning.**—In this case the boy seemed to be suffering from the effects of some narcotic. His pupils were dilated, he staggered in attempting to walk, and on being awakened from sleep would immediately go to sleep again. He complained of a fullness in his stomach, and said that he was drunk. Pulse and respiration were slow, he had no nausea or pain. He said that he had eaten some candy given him by another boy about 4 p. m. He did not recover from the effects until the next morning, when it was discovered that the so-called candy was five or six nutmegs.

### St. Paul Medical Journal

*September*

127 Hysteria in the Light of the Analytic Method. I. H. Coriat, Boston.
128 Migraine. L. A. Nelson, St. Paul.
129 The Public Drinking Cup. J. E. Dearholt, Milwaukee.
130 Dr. Alexander J. Stone: An Appreciation. J. L. Rothrock, St. Paul.

### Louisville Monthly Journal of Medicine and Surgery

*September*

131 Surgery of the Ureters. L. S. McMurtry, Louisville.
132 The Louisville Water Supply and Typhoid. J. R. Morrison, Louisville.
133 Value of Spontaneous and Induced Labyrinthine Irritation in Diagnosis. J. M. Ray, Louisville

### American Medicine, New York

*August*

134 Gonorrheal Conjunctivitis in an Adult Aborted by Application of Two Per Cent. Nitrate of Silver. J. H. Claiborne, New York.
135 Social and Clinical Aspects of Trachoma. A. Brav, Philadelphia.
136 Hysterical Amaurosis. H. K. Fleckenstein, Baltimore.
137 Redisplacement in Adjusted Colles' Deformity. C. I. West, Washington, D. C.
138 Common Sense at the Bedside. C. H. Maxwell, Morgantown, W. Va.
139 Physostigmin. W. C. Abbott, Chicago.
140 Hysterical Mutism. M. Neustaedter, New York.
141 Serotherapy of Gonorrheal Arthritis. R. H. Herbst, Chicago.
142 Optic Nerve Affections Due to Ethmoiditis. O. Schimer, New York.

### Western Medical Review, Omaha

*September*

143 Two Cases of Rupture of the Bladder. B. A. McDermott, Omaha.
144 Practical Observations in Syphilis. A. Schalek, Omaha.
145 Pseudomastoiditis. J. M. Patton, Omaha.
146 When Not to Operate. J. M. Mathew, Lincoln.
147 *Sources of Remedies. E. W. Rowe, Lincoln.

147. **Remedies.**—The practitioner, says Rowe, has not the time, inclination or ability to investigate his drugs thoroughly. This necessitates a reliable source to which he may have access at all times. All drug remedies may be found in one of the following sources: (1) The Pharmacopeia; (2) the National Formulary; (3) the current literature, and (4) New and Nonofficial Remedies. Speaking of the latter Rowe says that proprietary articles not included in New and Nonofficial remedies are not worthy of a physician's attention. The Council on Pharmacy and Chemistry has shown up fraud and misrepresentation connected with the exploitation of many proprietary articles. It has done more to raise the commercial ethics of pharmaceutical manufacturers than any other agency, not excepting the national Food and Drugs Act. It has given the profession a reliable source of information regarding the value of numerous nonofficial remedies. It has made plainer a scientific drug therapy as contrasted with the haphazard and vicious results of nostrum prescribing.

### Buffalo Medical Journal

*September*

148 Obstetrics and Gynecology. J. C. Webster, Chicago.
149 Important Factors in Diagnosis and Treatment of Surgical Tuberculosis. M. B. Tinker, Ithaca, N. Y.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

### British Medical Journal, London

*August 27*

1 *Treatment of Gastric Ulcer. C. Bolton.
2 *Necessity for Operation in Gastro-Duodenal Ulceration. K. W. Monsarrat.
3 Hepatic Abscess Following Acute Appendicitis. L. A. Bidwell.
4 *Cause of Death After Operation for Appendicitis. H. H. Brown.
5 *Direct Esophagoscopy. T. J. Faulder.

1. **Treatment of Gastric Ulcer.**—This is a detailed exposition of the treatment of gastric ulcer as employed by internists.

2. **Necessity for Operation in Gastroduodenal Ulceration.**—Monsarrat urges operation in all these cases, even in the absence of any complications.

4. **Cause of Death after Operation for Appendicitis.**—When suffering from an ordinary attack of appendicitis there are, according to Brown, three lines of defense by which the organism protects itself. The first line is the lymph agglutination of mesentery, intestines, etc., around the appendix, which limits the abscess, and prevents infection of the general peritoneal cavity with pus. It is these adhesions which surgeons are so careful to preserve, and fearful of breaking down. The second line of defense is a more important one. This is a layer of lymph covering the surface of the intestine and omentum and forming the wall of the abscess cavity. Brown believes that this lymph acts as a filter, allowing soluble toxins to pass through into the lymphatics and blood stream of the surrounding viscera, but presenting a barrier to the passage of bacilli, like the porcelain of a Berkefeld filter. It is this barrier which it is all important to preserve until

the third line of defense has been established. The third line is in the blood itself; the passage of toxins into the circulation results in a rise of temperature, quickening of pulse, etc., and the formation of protective antibodies in the serum. More and more toxin passes through as time goes on, and the abscess becomes larger, until, in course of time, generally during the second week of an attack, the temperature may fall to normal, or nearly so, and the serum become saturated with antibodies.

By this time the patient has become protected. If the abscess is opened, foul-smelling pus flows freely over the abdominal wound, which may afterward be sutured for the greater part of its extent and heal by first intention, without even any sign of redness around the stitches. There is no more danger to the patient than in opening an abscess anywhere else. The moral, Brown says, is obviously this: 1. Do not be in a hurry to operate, unless an operation can be performed within the first 24 hours, when the mischief is presumably confined to the appendix itself, or when general peritoneal infection is impending or has already taken place. 2. When definite abscess has formed, wait until after the first week; when about ten days have elapsed it is probable that protection will be complete. During this period the patient should, of course, be kept under close observation, so that an operation can take place at any time, if necessary. 3. Be contented to drain the cavity. Gentle flushing may be employed at the time of the operation if preferred, but do not do more than is necessary for this purpose. 4. Above all things, if operating early, simply evacuate the pus without touching the abscess wall, and leave the appendix to be dealt with at a later date when all infection has subsided.

5. **Direct Esophagoscopy.**—These 8 examinations recorded by Faulder were made on patients varying from 30 to 70 years of age, 4 males, 3 females. Two of them took place under general anesthesia; in the others no anesthetic was used, or only a little cocain brushed over the pharynx. He is convinced that these examinations show that esophagoscopy is safe and practical. As regards anesthesia, a sensible patient can be of great assistance to the surgeon if he be conscious. He can swallow when directed to do so, he can alter the position of head or neck as required, and his sensations are to some extent a safeguard against damage. For these reasons a beginner should not use general anesthesia, although it spares the patient much discomfort and permits of a longer and more careful examination than would otherwise be the case.

## Lancet, London

*August 27*

6 Students' Number. Session 1910-1911.

## Indian Medical Gazette, Calcutta

*August*

7 Dengue or Phlebotomus Fever. C. N. C. Wimberley.
8 Rationale of Quinin Prophylaxis. H. W. Acton.
9 Ascariasis. Is there a Round-Worm Fever? P. Hehir.
10 Leukemia and Pseudoleukemia. R. H. H. Goheen.
11 Mixed Tumor of the Parotid. J. Davidson.
12 Case of Pneumonia, Terminating in Gangrene of the Lung and Presenting Several Unusual Features. T. C. Rutherfoord.
13 Subconjunctival Injections of Cyanid of Mercury in Trachomatous Conditions. H. Smith.
14 Kala-Azar in Patna. D. N. Prashad.

## Australasian Medical Gazette, Sydney

*July 20*

15 Influence of the Medical Profession on the National Life in Australia. W. A. Verco.
16 *Snake Venom. D. A. Welsh and H. G. Chapman.
17 *Symptom-Complex in Ruptured Abdominal Hydatid. J. E Barling and D. A. Welsh.
18 *Two Interesting Cases of Fibromyoma of the Uterus. R. Worrall.
19 Etiology of Ectopic Gestation, with Remarks on Diagnosis Based on an Experience of 114 Cases. G. Craig.
20 Tubal Pregnancy Based on 108 Consecutive Cases. H. C. T Young.
21 Prevalence of Syphilis in Brisbane, and Consideration of Certain Other Matters in Connection with Public Mortality. E. S. Jackson.
22 Treatment of Malignant Diphtheria. W. F. Litchfield.

16. **Snake Venom.**—It is with the hemolysins of Australian venoms that the authors have mostly worked, and they give a descriptive account of their action, and note their bearing on the general question of immunity. These venoms include those of the black snake (*Pseudechis porphyriacus*), the fierce snake (*Pseudechis ferox*), the brown snake (*Diemenia textilis*), the tiger snake (*Notechis scutatus s. Hoplocephalus curtus*), the death adder (*Acanthophis antarcticus*), the broad-headed snake (*Hoplocephalus bungaroides s. variegatus*), and, among monotremes, the poison gland of *Echidna aculeata*. Among the red blood cells tested with one or more of these venoms were those of man, the dog, horse, pig, sheep, ox, and snake. The experiments were designed to test the interaction of varying quantities of venom with (1) red blood cells washed free of serum, (2) red cells and fresh serum, and (3) red cells and serum heated to (a) from 56 to 60 C., (b) 85 c., and (c) 100 C.

The following general results were obtained:

1. As in the case of Indian and American species, the venoms of different Australian snakes vary greatly in their hemolytic effects; and, by testing with the washed corpuscles of some relatively susceptible species, it is possible to grade the venoms according to their toxicity for the hemocytes.

2. The washed corpuscles of different species of mammals differ greatly in their susceptibility and resistance to individual venoms, and may be grouped accordingly. Corpuscles which are most sensitive to one venom are found to be most sensitive to others also; and corpuscles which are most resistant to one venom are most resistant to others.

3. The presence of the fresh homologous serum, in minute or moderate quantity, has not, in their experience, activated any venom for corpuscles that are insusceptible when washed. With susceptible corpuscles in the fresh serum has in some instances reinforced the action of venom—that is, serum complement or serum lecithin has been superadded to the endolecithin. With other susceptible corpuscles, however, the fresh serum has inhibited the hemolytic action of the venom—that is, inhibitory substances in the serum have predominated.

4. Heating the serum does not produce much change for or against activation at the lower temperature, 56 to 60 C., indicating that serum complements are not much concerned in the ineraction. But, at higher temperatures, 85 C. and notably at 100 C., a marked effect is noted. When the venom can dissolve the washed corpuscles, the addition of serum heated to 100 C. accelerates and extends the hemolysis; and, in some instances where the washed corpuscles are not affected by venom, the presence of serum similarly heated so activates the venom as to induce hemolysis probably by liberation of lecithin.

5. In some combinations of venom corpuscles and heated homologous serum, no hemolysis occurs, and yet, with the same venom, the same corpuscles and a heated heterologous serum marked hemolysis may take place, indicating that heating different sera renders available very different amounts of a venom activator, probably lecithin.

17. **Symptom-Complex in Ruptured Abdominal Hydatid.**—The facts presented by Barling and Welsh have reference to a series of 6 cases of hydatid disease complicated by rupture or leakage of the cyst into the peritoneal cavity. In 3 of the cases the cyst was situated in the liver, in the remaining case in the spleen. In 50 per cent. of the cases examined the blood change was a marked one, in another 25 per cent. the change was moderate, while in the remaining 25 per cent. it was entirely absent or so slight that it was of no use from a diagnostic point of view. The authors found eosinophilia to be a marked feature of every case in which the cyst had ruptured or leaked into the abdominal cavity. The actual number of the eosinophils present in the blood in the 6 cases varied considerably. In 3 the reaction was excessive, the actual figures being in the first case 8,580 eosinophils per c.mm., or a number equal to 54 per cent. of the leukocyte content of the blood; in the second case there were 8,200 eosinophils per c.mm., or a number equal to 47 per cent. of the leukocytes; in the third case there were 5,440 eosinophils per c.mm., or a number equal to 34 per cent. of the total leukocytes. In two of the remaining cases the blood change was a marked one, there being in one of them 1,628 eosinophils per c.mm., a number equal to 22 per cent. of the total leukocytes, and in the other 1,320 eosinophils per c.mm., a number equal to 12 per cent. of the leukocytes present. In the one remaining case the reaction, though slight, was definite, there being 354 eosinophils per c.mm., a number equal to 5.6 per cent. of the total leukocytes.

The second outstanding feature of these cases of ruptured abdominal hydatid is the peritonitis set up by the presence of the hydatid material in the peritoneal sac. The most noticeable feature of this peritonitis is the large amount of fluid which is poured forth. The third feature is the urticaria which attends the rupture of the hydatid cyst. In the cases which have come under the author's notice it was invariably present.

In 2 of the 6 patients no history of a rash could be obtained, although careful inquiries were made on this point. In

the other 4 cases urticarial rashes were noticed by the patients, coming on soon after the rupture, lasting for a day or two, and then passing off. In one case there was a history of recurring attacks of urticaria, the attacks in all probability coinciding with a periodic escape of hydatid fluid into the abdominal cavity.

18. **Fibromyoma of the Uterus.**—The first case, a fibromyoma of the uterus, causing symptoms in a virgin, aged 63, Worrall says is a proof that the menopause does not cause atrophy and disappearance of these tumors, as was for many years maintained by writers on the subject, and although at the present time this opinion is generally held by all authorities to be fallacious, it is far from being extinct in the profession. The second case is a remarkable example of genitalia the seat of three different varieties of neoplasm at the same time, viz.: (1) Proliferating papillary ovarian cyst; (2) multinodular fibromyoma of the uterus; (3) adenocarcinoma of the uterine body. But its greatest importance is that it adds another to the rapidly lengthening list of reported cases of myomata associated with malignant disease of the uterus. Both cases bear witness to the favoring influence of celibacy in the development of fibromyoma of the uterus.

## Medical Press and Circular, London

*August 24*

23 Occurrence of Pain and Other Sensory Disturbances in the Chronic Stage of Infantile Paralysis. F. Hernaman-Johnson.
24 Treatment of Parasyphilis of the Nervous System in the Light of Recent Research; Paresis and Tabes Dorsalis. T. A. Williams.
25 Disinfecting Power of "Sanitas Fluid" on Certain Pathogenic Microbes in Morbid Products. E. Klein and F. W. Andrews.

## Quarterly Journal of Medicine, Oxford

*April*

26 *Question of the Side Affected in Hemiplegia and in Arterial Lesions of the Brain. E. Jones.
27 Acute Pyelitis Due to *Bacillus Coli* as It Occurs in Infancy. S. McDonald.
28 *So-Called Bigeminy of the Heart. T. Lewis.
29 *Complete Heart-Block and Auricular Fibrillation. T. Lewis and E. G. Mack.
30 Presence of Hemagglutinins, Hemopsonins and Hemolysins in the Blood Obtained from Infectious and Non-Infectious Diseases in Man. L. S. Dudgeon and H. A. F. Wilson.
31 Work of Andrew Connal. A Study of Cerebrospinal Fluid in Meningitis. R. v. Jaksch, Prague.
32 *Ventricular Venous Pulse of Regular Rhythm. E. E. Laslett.
33 *Chylous and Pseudochylous Ascites. R. L. M. Wallis and H. A. Scholberg.
34 *Myopathies or Muscular Dystrophies. F. E. Batten.

*July*

35 *Ochronosis Associated with Carboluria. A. P. Beddard.
36 *Bigeminy of the Ventricle and Auricular Fibrillation. T. Lewis.
37 *Simple Clinical Method of Demonstrating and Measuring Dysergia. T. A. Williams.
38 Modern English Cardiovascular Teaching. E. M. BrockBank.
39 Motor Functions of the Stomach. A. F. Hertz.
40 Morbid Histologic Changes Met in the Lymph Glands: Especially in the Formation of Hemolymph Glands. W. O. Meek.
41 Lactic Acid in Metabolism. J. H. Ryffel.

26. **The Side Affected in Hemiplegia and in Arterial Lesions of the Brain.**—Jones studied 5,281 cases of cerebral hemorrhage, thrombosis and embolism, and hysterical hemiplegia from the point of view of the side of the lesion or of the hemiplegia; in 3,539 cases of these the nature of the lesion was definitely determined by post-mortem examination. With none of these conditions was any evidence obtained to indicate that either the lesion or the hemiplegia is more apt to affect one side rather than the other. The general teaching to the contrary is therefore not founded on any critical evidence.

28. **So-Called Bigeminy of the Heart.**—Lewis considers it advisable that the term bigeminy, employed in any sense other than that of the coupling of beats, should be allowed to lapse; at all events, until the time when we are in fuller possession of the facts in regard to the irregularities which have been under consideration.

29. **Complete Heart-Block and Auricular Fibrillation.**—A case is described by Lewis and Mack in which a slow action of the ventricle is associated with the ventricular form of venous pulse and with seizures of a synocopal or epileptic nature. Evidence is brought forward to show that the slow beats of the ventricle start from a point in the ventricular musculature at which it is joined by the tissues uniting it to the auricle, and that the impulses originating the rhythm start at a point not far removed from the auriculoventricular ring. The rhythm of the ventricle is interrupted by extra beats arising at an identical focus, and this focus is near that from which the ventricular rhythm of complete heart-block springs. It can be shown, on the other hand, that the auricle is fibrillating, but that the impulses so created are not transmitted to the ventricle, for its rhythm is regular. It is concluded that a lesion is present which completely breaks the functional continuity of auricle and ventricle. In brief, the heart mechanism is the result of (1) auricular fibrillation and (2) complete heart-block. The fits recorded are of two kinds: the one is similar to those recognized as commonly accompanying *a-v* heart-block, and is ascribed to cessation of ventricular contraction; in the second variety, a great increase of ventricular rate was observed. Such increased frequency of ventricular contraction, during the prolongation of heart-block seizures, has been previously recorded on several occasions, and the suggestion is offered that in some such instances it may result from an irritation produced in the ventricle as a consequence of diminished blood supply to this chamber of the heart.

32. **Ventricular Venous Pulse of Regular Rhythm.**—The outstanding feature in Laslett's case is the remarkable regularity of the rhythm associated with a moderate frequency, a regularity which under various conditions showed great constancy and was maintained for a period of at least six months. At the last the pulse showed occasional intermissions, and it appeared that the intermissions were due to premature ventricular contractions too weak to affect the radial artery.

33. **Chylous and Pseudochylous Ascites.**—According to Wallis and Scholberg the milky appearance of a pseudochylous ascitic fluid is due to a lecithin-globulin complex, which is held in suspension by the inorganic salts present. Removal of the inorganic salts present by dialysis results in the precipitation of the lecithin-globulin complex, and the disappearance of the opalescence. The milky appearance of the fluid is not due to free lecithin, fat, or a mucinoid substance. The power of resisting putrefaction is due to the presence of lecithin.

34. **Myopathies or Muscular Dystrophies.**—The object of Batten's paper is to consider the present standpoint of our knowledge with regard to the myopathies or muscular dystrophies. In addition to the ordinary well-recognized types, *viz.*, the pseudo-hypertrophic, the juvenile, and the facio-scapulo-humeral type, the following types have been added, *viz.*, the simple atrophic type (myotonia congenita), the distal-type, and the myotonia atrophica type. It has been shown that the condition described under the title "myotonia congenita" is a true myopathy, both on clinical and pathologic grounds, and that it should be included in the simple atrophic type, or the name myotonia congenita might replace the name "simple atrophic type." It has been shown that the distal type is a true myopathy and distinct from the disease described by Charcot, Marie, and Tooth (peroneal type), which is a myelopathic affection and should not be included under the myopathies.

The group myotonia atrophica has been placed with the myopathies and not with myotonia or with the myelopathic affections, since the evidence, both clinical and pathological, is in favor of such a view; it is admitted, however, that in the only case which has been fully examined pathologically certain changes have been found in the posterior columns of the cord. If in further examination this is found to be a constant feature it will necessitate the removal of this group from the primary myopathic affections.

It is recognized that there are many cases of myopathy which do not correspond in all particulars to the characteristics of any one type, but may possess the features of two or more types. These should be placed with the type to which they bear the strongest resemblance, or, if that is not possible, in the group of mixed and transitional cases. The

myopathies or muscular dystrophies must be regarded as a whole, and though for clinical purposes it is convenient to separate them into types yet there is no hard and fast line of distinction between one type and another.

35. **Ochronosis Associated with Carboluria.**—Beddard's case is said to be the twentieth recorded case of ochronosis. Five of these cases, including his, have been associated with a prolonged application of carbolic oil to ulcers on the leg. The length of time during which the oil was used, and before the pigmentation was observed, has varied between 24 years in Reid's case and 3 years in the present one; in both cases the strength of the oil was 1 to 20. In all of them alcaptonuria was almost certainly absent. In regard to the clinical symptoms they have all shown the characteristic pigmentation of the ears and eyes. There are 8 cases on record in which ochronosis has been associated with undoubted alcaptonuria. In Hacker and Wolf's 2 cases melanuria and not alcaptonuria was present. In one case, although the urine was black, both melanuria and alcaptonuria appear to have been absent. In the remaining 5 cases no abnormality in the urine is known.

36. **Bigeminy of the Ventricle and Auricular Fibrillation.**—The ventricular bigeminy which occurs in clinical instances of auricular fibrillation, either spontaneously or in the wake of digitalis administration, according to Lewis is due to disturbance of the irregular series of responses to auricle, by ectopic beats arising in the ventricular musculature itself.

37. **Simple Clinical Method to Demonstrate and Measure Dysergia.**—This method depends on the fact that when a dysmetric patient endeavors abruptly to arrest any movement he has begun, he can neither do so nor prevent an excessive movement from occurring in the reverse direction.

### Journal of Tropical Medicine and Hygiene, London

*August 15*

42 Blackwater Fever in Tangier. G. Breeze.
43 Beriberi and White Rice: An Experiment with Parrots. L. G. Fink.

### Clinical Journal, London

*August 24*

44 Hysteria in Childhood. R. Hutchison.
45 Tuberculosis; Surgical Emphysema of Abdominal Wall. W. H. Battle.
46 Practice of Inoculation of Small-Pox. F. M. Sandwith.

### Bulletins de la Société de Pédiatrie, Paris

*June, XII; No. 6, pp. 289-366*

47 *Operative Treatment of Congenital Stenosis of the Biliary Passages. (Rétrécissements congénitaux des voies biliaires.) V. Veau.
48 Dwarf Growth Possibly of Suprarenal Origin. (Nainisme avec dystrophie osseuse et cutanée spéciales.) Variot and Pironneau.
49 Appendicitis in Two Infants. M. Nageotte-Wilbouchewitch.
50 *Experiences with Epidemic Cerebrospinal Meningitis. H. Richardière and E. Merle.
51 Removal under Bronchoscopy of Foreign Bodies in Bronchi of Two Infants. Guisez.
52 Peritoneal Complications of Scarlet Fever. A. Tourained and H. Fenestre.

47. **Congenital Stenosis of Biliary Passages.**—Veau has compiled 24 cases of congenital stenosis of the pylorus and states that 2 of the patients were saved out of 11 operated on. One of the patients thus cured, a child not quite 4 years old, was in his own practice. Jaundice and tumefaction are the symptoms compelling operation. He urges prompt operation as the only hope of saving the patients in these conditions.

50. **Epidemic Cerebrospinal Meningitis.**—In one of the 10 cases reported there was an eruption of rose-colored spots the seventh day of the disease resembling in every respect the spots of typhoid fever, but subsiding again entirely in 3 days. Except for one case of cerebral hemiplegia all the children have recovered completely from the disease without sequels, this series demonstrating anew the efficacy of serotherapy.

### Presse Médicale, Paris

*August 17, XVIII, No. 66, pp. 625-632*

53 The Physiologic Bases of Medical Electricity. Value of Electricity in Treatment of Muscular Atrophy. A. Zimmern and P. Cottenot.
54 History of Puncture in Treatment of Cold Abscesses. (Le traitement des abcès par congestion au commencement du siècle dernier.) M. J. Doche.
55 Hematocele in the Pelvis from Cicatricial Stenosis of the Cervix Uteri. M. J. Caraven.
56 Caseous Rhinitis. M. N. Taptas.
57 Professional Neuroses Among Telephone Attendants. M. V. Thébault.
58 *Pseudopregnancy from Ovarian Insufficiency. (La fausse grossesse par insuffisance ovarienne.) G. Sardou.

*August 20, No. 67, pp. 633-640*

59 *Postoperative Occlusion of the Duodenum. P. Hardouin.
60 Acute Ileocolic Invagination in 17-Months' Babe. Kirmisson and Moulonguet.
61 Ehrlich's "606" in Treatment of Syphilis. J. Dumont.

58. **Pseudopregnancy from Ovarian Insufficiency.**—Sardou has encountered several cases in which the suspension of menstruation and progressive enlargement of the abdomen suggested pregnancy but the genital findings were dubious. In one typical case the woman was drowsy much of the time and disinclined to effort, readily getting out of breath. Her appetite was poor although digestion was apparently normal. He ascribed the amenorrhea to ovarian insufficiency and this assumption was confirmed by the return of menstruation after 2 weeks of ovarian organotherapy. The results were equally good in 3 similar cases. In another case the woman was actually pregnant, but the brief ovarian treatment did no harm.

59. **Postoperative Occlusion of the Duodenum.**—Hardouin reports 5 cases of this mishap. The true cause of the disturbances was recognized in time in 3 cases but not in the others and these 2 patients succumbed. The causes for the postoperative occlusion are evidently multiple as it develops after the most diverse abdominal operations, but the primary dilatation of the stomach and the preponderant rôle of the peripheral nervous system are features common to nearly all the cases on record. Although the occlusion of the duodenum is secondary, it soon assumes the most prominent part in the syndrome and is the cause of the lack of results from lavage of the stomach and other measures. The importance of this duodenal factor is abundantly demonstrated further, he states, by the immediate relief and often the entire cessation of all the disturbances when the mesentery is relaxed by turning the patient over on the abdomen or in the knee-chest position. In Hardouin's first case the patient was doing well the second day after hysterectomy for fibroma when serious symptoms suddenly developed—incessant vomiting, small rapid pulse and ballooning of the epigastrium. Lavage of the stomach gave only slight transient relief, but placing the patient in the knee-chest position put an end almost immediately to all the symptoms. The patient was then left in the ventral decubitus and in half an hour the bowels moved and all disturbance was at an end. In the second case, the woman was placed in the knee-chest position at the first sign of trouble, and there was no further disturbance. In the fourth case the knee-chest position was used but not until after the syndrome had lasted for about 4 days and the patient died in collapse after subsidence of the special symptoms. In the other case no attempt was made to change the position of the patient and she died the next day; this case occurred in a country practice.

### Semaine Médicale, Paris

*August 24, XXX, No. 34, pp. 397-408*

62 Autochthonous Ameba Dysentery. C. Garin.

### Archiv für Verdauungs-Krankheiten, Berlin

*August, XVI, No. 4, pp. 419-536*

63 *High Diaphragm and the Circulation. (Zwerchfellhochstand und Kreislauf.) E. Jürgensen.
64 Permeability of the Intestine for Diastases. (Durchlässigkeit des Darmes für Diastasen.) J. Wasserthal.
65 *Importance of Proctoscopy for Diagnosis and Treatment of Rectal Disease. (Bedeutung der Rekto-Romanoskopie für die Diagnose und Therapie der Erkrankungen des Darmkanals.) M. Pewsner.
66 Dilatation of the Esophagus. (Zur Pathologie und Therapie der Speiseröhrenerweiterungen.) F. Best.
67 *Tuberculosis of the Esophagus. A. Staehelin-Burckhardt.

63. **High Diaphragm and its Influence on the Circulation.**—Jürgensen calls attention to the importance of free excursions of the diaphragm in maintenance of normal conditions in the circulation. The *x*-rays have shown that comparative immobility of the diaphragm is the explanation for many puzzling symptoms; Jürgensen has encountered a number of cases of high, unyielding diaphragm generally in persons of sedentary habits—men from 40 to 60 years old, mostly in

high responsible positions and brain workers. They presented various degrees of obesity, flatulence or aerophagy but all had in common a tendency to dizziness, oppression in the heart region, palpitations, scotoma, enlargement of the veins, especially in the neck, and a gray or yellowish complexion sometimes suggesting cachexia. A little shortness of breath after muscular exertion was the only complaint in regard to dyspnea. In this condition, as the patient breathes the thorax is seen to be less movable than normal. The maximal blood pressure is high, averaging from 125 mm. mercury for the minimum to 170 or 180 mm. maximum (Gaertner's tonometer), but the pressure returns to normal when normal conditions in the respiration are restored. Sometimes in the cases reported the blood-pressure differed in the right and left sides. Treatment should aim to promote diaphragmatic respiration by training the costal muscles to perform their task, exercising them to increase their tonicity, while regulating the diet to strengthen the muscles. In conclusion the author warns that the atony of the stomach and intestines in the corpulent with considerable meteorism may simulate a higher degree of obesity than actually exists. In treating obesity the aim should be, he says, not so much to reduce the weight as to render the patient's muscles more functionally capable. The greater demands on the muscular capacity, however, require a corresponding amount of albumin in the food; the diets which neglect this fail to supply conditions favorable for correction of the atony of the stomach.

65. **Importance of Direct Visual Inspection in Rectal Disease.**—Pewsner has applied recto-sigmoidoscopy in 73 cases in the last 5 years and has found it valuable in detection of inflammation and cancer in the incipient phases. In some cases the only complaint was severe constipation, in others merely tenesmus. Even ulceration in the lower segment of the bowel may occur without symptoms to attract attention to the lesion. He was able by this early direct visual inspection to discover cancer in 3 cases, 13, 16 and over 18 cm. above the anus which had escaped digital examination. The only symptoms had been occasional false impulses for defecation. The technic of direct visual inspection is simple and easy, far more so than cystoscopy, he says, and he urges internists to adopt it as a routine measure.

67. **Tuberculosis of the Esophagus.**—Burckhardt reviews the cases on record of this, perhaps rarest of all localizations of tuberculosis, and then describes a personal case in a man of 60; the lesion was evidently secondary to advanced processes in the lungs. In a second personal case there was no chronic lung affection and no tuberculous sputum to be swallowed but there were tuberculous meningitis and tuberculous lesions in the fibula, etc.

### Centralblatt für die Grenzgebiete der Med. und Chir., Jena

*August 13, XIII, No. 14, pp. 529-560*

68 *Thrombosis and Embolism of the Mesenteric Vessels. D. G Zesas. Commenced in No. 9.

68. **Thrombosis and Embolism of the Mesenteric Vessels.**—Zesas found 363 articles in the literature bearing on this subject, all of which he reviews. The results to date of operative treatment are not very enccuraging—only 5 cases of recovery out of 13 in which the infarcted part of the bowel involved was resected. Only 7 cases are known of simultaneous obliteration of both vein and artery. Massage is particularly dangerous if mesenteric thrombosis or embolism is suspected. Exploratory laparotomy is indispensable. In 13 cases conditions were found inoperable but Tschudy cured a patient by packing with gauze to shut off the infarcted region, keeping the abdominal wound open. Symptoms of ileus had come on 3 days after an interval appendicectomy; the entire cecum was transformed into a bluish solid tumor but there was no gangrene, and the permeability of the bowel was restored in a few hours. Mouchet has reported a similar case but the patient succumbed. The details of 6 other cases are related in which an artificial anus was made but none of the patients survived the embolism. Kölbing has reported a case in which gastroenterostomy was done after resection of the infarcted loop, with recovery of the patient, a woman of 31 who had had diarrhea for several days with increasing abdominal pain and vomiting and tympanitic resonance over a loop of intestine on the left side. In 13 other cases the loop of intestine involved was resected, with recovery of 5 of the patients. Thrombosis of a mesenteric vessel has been observed in a month-old babe and in 2 children of 5 and 8, but the majority of patients were between 30 and 60.

### Deutsche medizinische Wochenschrift, Berlin

*August 18, XXXVI, No. 33, pp. 1513-1552*

69 *Ehrlich's "606" in Syphilis. (Arsenobenzol und Syphilis.) K. Herxheimer.
70 The Contents of the Duodenum. (Erfahrungen über den Duodenalinhalt.) M. Einhorn.
71 Cause of Retention of Bromin and Displacement of Chlorin in the Blood by Bromin. (Ursache der Bromretention und die Verdrängung von Chlor durch Brom im Blute.) E. Frey.
72 Syringomyelia in Mother and Daughter. H. Goldbladt.
73 Case of Pure Sensory Alcoholic Polyneuritis. A. Pelz.
74 *Painless Operations on the Face and Mouth. (Schmerzlose Operationen im Gebiete des Gesichtsschädels und Mundes unter Leitungsanästhesie.) H. K. Offerhaus.
75 Primary Tuberculosis of the Fallopian Tubes. A. Müller.
76 *Extension in Treatment of Nervous Disease. A. Heermann.
77 Biologic Method of Developing Photographs. (Die Pepsinfestigkeit der belichteten Chromgelatine als Grundlage eines biologischen photographischen Entwicklungsverfahrens.) L. Jacobsohn.

69. **Ehrlich's "606" in Syphilis.**—Herxheimer states that in 11 weeks' experience with "606" and 83 cases of syphilis no by-effects of consequence were noticed beyond the local painfulness and febrile reaction, all of which are avoided by the later improved technic. There was transient retention of urine in one neurasthenic patient, but urination became normal again at once after a sitz bath. The reflexes behaved normally in all cases. According to Ehrlich's directions, the fundus of the eye, the heart, lungs, liver and kidneys were investigated in every case before the drug was given and any pathologic findings caused the patient to be excluded from this method of treatment. The findings in regard to spirochetes, the blood count and the Wassermann reaction were also recorded. No spirochetes could be discovered in 82 cases 48 hours after the injection, nor has recurrence been observed during the 11 weeks to date. In the other case the spirochetes did not seem to be affected by the drug, and A. Glück has encountered 2 similar cases; it seems as if certain rare strains of spirochetes must be insusceptible to the action of the drug, just as some have been known to be mercury-fast. In a case of universal psoriasis of 18 years' standing there was extensive desquamation after the injection but after 48 hours conditions had returned apparently to the same as before the injection. Otherwise, Herxheimer's experience has been favorable in regard to the efficacy of the drug and, like others, he mentions especially its prompt and effectual action in malignant syphilis. [Jellinek raises a warning voice not to be too hasty in judgment of the new remedy for syphilis, saying that the lay press throughout Germany is proclaiming it far and near as a prompt and radical cure for syphilis and is thus throwing down the barriers against venereal infection by removing the fear of syphilis. Jellinek comments further on the actual criminal optimism which is being fostered among the masses by the marvelous stories in regard to "606" that are issuing from the hospitals. He says this in the *Klin.-therap. Wochenschrift*, 1910, XVII, 80, in commending a pamphlet on sexual hygiene by Prof. S. Ribbing of Lund, Sweden, which he regards as a model work for young men on this subject.]

74. **Painless Operations on the Bones of the Face and the Mouth Under Local Anesthesia.**—Offerhaus' method of obtaining access to the trigeminal nerve for relief of neuralgia by injection of alcohol was described in THE JOURNAL, August 13, 1910, page 630. He here states that the method is proving valuable for local anesthesia for operations on the face, jaws and mouth in which the cooperation of the patient is of inestimable advantage. By the technic described it is possible, he says, to locate the foramen desired without the least trouble and without previous trials on the cadaver, except under very unusual conditions. He has applied this technic for injection of a local anesthetic in 11 cases and the results were good in 9, the failure in the others being due to the displacement of the nerve by the cancerous growth for which the operation was undertaken. He usually gives a sedative to the patients before injecting the anesthetic, and

he does not attempt to apply this technic for local anesthesia in case the patient is very nervous and excitable. In the cases adapted for it, however, the advantages are great. The illustrations explain the technic described. He has applied the technic for treatment of severe trigeminal neuralgia in 12 more cases since those reported in his previous communi-

Fig. 1.—Application of calipers to measure the distances and locate imaginary connecting line.

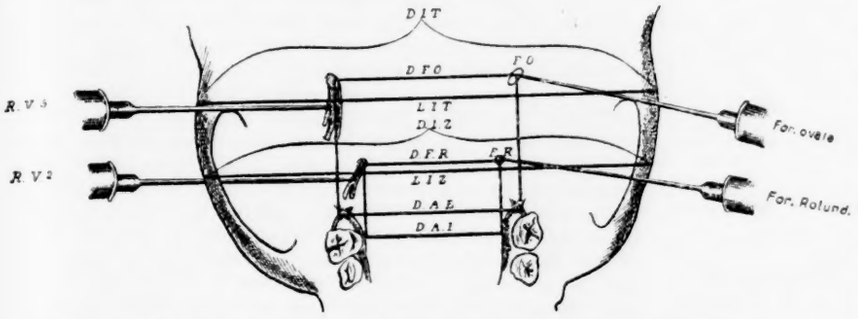


Fig. 2.—Third Branch of the Trigeminal nerve: D.F.O. = D.A.E. Needle to be inserted to a depth of ½ (D.I.T.—D.A.E.) D.I.T. = Distantia intertubercularis. L.I.T. = Linea intertubercularis. D.F.O. = Distantia Foram. oval. D.A.E. = Distantia interalveolaris externa.

Second Branch of the Trigeminal Nerve: D.F.R. = D.A.I. Needle to be inserted to a depth of ½ (D.I.Z.—D.A.I.) D.I.Z. = Distantia interzygomatica. L.I.Z.=Linea interzygomatica. D.F.R. = Distantia Foram. rotund. D.A.I. = Distantia interalveolaris interna.

cation; in 10 of the cases a complete cure was realized and material improvement in another case while in still another case the trouble was of central origin and naturally no benefit was derived. Except for a few weeks of stiffness and pain in chewing in one case, no untoward by-effects were observed.

76. **Stretching the Nerve in Treatment of Sciatica and Other Nervous Disease.**—Heermann pulls on the leg of the reclining patient, exerting about as much force as for pulling off a boot. If this relieves the pain of the sciatica, he applies extension systematically, raising the extended leg once or twice a day to the point borne without special pain and then applying extension to the foot with the leg resting on an inclined plane. This is repeated cautiously once or twice a day for from 5 to 30 seconds at a time. This stretching is supplemented by stretching the leg backward for a few seconds as the patient lies on the side. The ordinary measures are also applied but the nerve stretching often proves successful alone. For adjuvant massage he places his hands flat and gently on the abdomen and sacrum of the patient as he lies on his side. If the patient shrinks, he stops at once, but if the pressure is gratefully received he massages with the flat hand, making circular motions and gradually approaching nearer and nearer to the points of greatest pain. This massage in combination with the extension relieved the pain better than sedatives in some of his cases. Pressure from a dry rubber sponge inside a girdle is useful in the cases in which pressure relieves the pain.

## Medizinische Klinik, Berlin

*August 21, VI, No. 34, pp. 1323-1358*

78 Treatment of Otitis Media. (Behandlung der akuten und subakuten Erkrankungen des Mittelohrs.) P. Stenger.
79 *Importance of Constitutional Factors in Etiology of Certain Nervous Disturbances. (Bedeutung des Konstitutionalismus für die Aetiologie einiger Nervenkrankheiten: Rezidivierende Okulomotoriuslähmung und toxische Polyneuritis.) A. Margulies.
80 Iodin-Benzin for Skin Sterilization and for Treatment of Wounds. G. Meyer.
81 *Experiences with Ehrlich's "606." Braendle and Clingestein.
82 Congenital Atresia of the Duodenum. W. Weber. Commenced in No. 33.
83 *Diagnosis of Acute Pancreatitis in General Practice. Stuparich.
84 Morphologic Changes in the Blood with Goiter. (Ueber morphologische Blutveränderungen bei Struma.) C. Müller.

79. **Constitutional Factor in Nervous Disturbances.**—Margulies writes from the clinic in charge of von Jaksch at Prague to relate a number of cases of recurring oculomotor paralysis or toxic polyneuritis in which the evidence seems to sustain the assumption that certain nerves or nervous systems are congenitally predisposed to yield more readily to injurious influences than those in other persons. This assumption is confirmed by the occurrence of certain affections in families. Some parts of the nervous system, especially the peripheral, are peculiarly non-resistant in these persons and yield readily to injurious external influences, while other regions and other individuals escape. In conclusion, he reports a case of toxic polyneuritis in a father and 2 sons, the symptoms suggesting cholera and being followed by pains and paralysis in the legs, all coming on simultaneously in the 3 men after eating heartily of a dish of rice. The father succumbed by the end of the second week, with all the extremities paralyzed. The young men have recovered some ability to walk during the year since, but suffer from pains in the legs and early exhaustion. The syndrome suggested beriberi, especially as it came on immediately after eating rice. There had been no disturbances elsewhere in the town from eating the rice from the same bag, and nothing abnormal could be discovered about the rice when examined by the authorities. Everything speaks for the assumption, he is convinced, of a constitutional susceptibility on the part of the nervous system involved; the clinician should strive to distinguish this constitutional factor in the syndrome observed from the symptoms peculiar to the affection in question.

81. **Ehrlich's "606" in Syphilis.**—Braendle and Clingestein report their experiences with 27 cases of syphilis. The results were sometimes brilliant but in others not particularly satisfactory, fully as good results being attainable, they say, under the ordinary measures. The promptly favorable action of the drug in malignant syphilis, however, was particularly striking. By-effects were observed in the vascular system; in several patients the blood-pressure was increased immediately after the injection while from the second to the third day the pulse was inclined to be accelerated and small but there were no threatening symptoms. Three patients, however, presented signs of collapse of brief duration. (Spatz has reported similar experiences in the *Wiener med. Wochenschrift*, 1910, No. 27.) The pulse kept fast longer than corresponded to the fever. Other symptoms eventually ascribable to arsenic intoxication were headache, dizziness, nausea and vomiting which were observed in several cases. Only slight by-effects on the part of the nervous system were noted; in about a fourth of the cases the tendon reflexes were exaggerated for a few days after the injections. Most of the patients gained greatly in weight after the injection, a gain of from 6 to 15 pounds in a few weeks being the rule. The Wassermann reaction has persisted positive to date in all

but one of the patients. The authors add in conclusion that the possibility of local persistence of traces of the arsenic suggests that serious results might follow continued or repeated use of the drug, similar to the tragedies that have followed the use of gray oil, that is, an oil suspension of metallic mercury.

83. **Acute Pancreatitis.**—Stuparich was called to a middle-aged man taken suddenly ill after eating fish. The entire abdomen was painful throughout and there were also spontaneous pains, especially severe across the back, on a level with the lower thoracic and upper lumbar vertebræ. After excluding the diagnosis of angina pectoris, perforation of a viscus and appendicitis, Stuparich differentiated the trouble as acute pancreatitis and ordered the patient taken at once to a hospital for an eventual operation. The hospital authorities, however, ascribed the disturbances to botulism; after some improvement under medical measures alone the patient died on the sixth day. There was a history of pain in the epigastrium years before and symptoms which had then been diagnosed as echinococcus disease of the liver, but autopsy revealed merely the scar of a healed duodenal ulcer and recent acute pancreatitis.

## Münchener medizinische Wochenschrift

*August 16, LVII, No. 33, pp. 1721-1768*

85 Cause and Prevention of Puerperal Fever. (Entstehung und Verhütung des Puerperalfiebers.) A. Döderlein.
86 *Ehrlich's "606" in Syphilis. J. Iversen.
87 *Successful Treatment of Syphilitic Nursling by Giving Its Mother Ehrlich's "606." (Erfolgreiche Behandlung eines syphilitischen Säuglings durch Behandlung seiner stillenden Mutter mit "606.") K. Taege.
88 Pyramidon in Treatment of Typhoid. L. Jacob.
89 Epidemic Cerebrospinal Meningitis. Eschbaum.
90 *Outcome of Treatment of Scoliosis with Creeping Exercises. (Ergebnisse der Kriechbehandlung.) J. Fränkel.
91 *Behavior of the Heart in Scoliosis. (Verhalten des Herzens bei Skoliose.) T. Brugsch.
92 *Bismuth Paste in Diagnosis and Treatment of Chronic Suppuration. E. G. Beck.
93 *The Personal Factor in Tuberculin Treatment. L. Saathoff
94 Tuberculin in Reduction of Fever in Tuberculous Patients. (Zur Entfieberung Tuberkulöser durch Kochsches Alttuberkulin.) H. Engel.
95 Origin of Congenital Luxation. (Ein experimentell-embryologischer Beitrag zur Entstehungsgeschichte der angeborenen Luxation.) H. Braus.
96 Beta-Chloromorphid Associated with and as Antagonist to Apomorphin. E. Harnack and H. Hildebrandt.

86 and 87. **Treatment of Syphilis with Ehrlich's "606."**—Iversen reports favorable experiences with "606," which he says has a specific action on the *Spirochæta pallida*, and is able to banish the manifestations of syphilitic infection in the briefest time. The rapidity of the subsidence depends of course, he adds, on the severity of the lesions. In his experience at St. Petersburg with 60 patients, the Wassermann reaction was invariably negative by the twentieth or fortieth day after the injection of the drug and in 2 cases it became negative by the eighth and tenth day. Immediately after the injection the reaction became more intense and then gradually subsided. He found spirochetes constantly in the primary chancres before treatment but was unable to find any in 2 or 3 days after the injection. In 10 cases he aspirated fluid from the enlarged inguinal glands and found spirochetes constantly before treatment but none could be discovered 3 or 4 days after the injection of "606." He states that no disagreeable by-effects were observed in any of his cases.

Taege reports a case in which the infant of a syphilitic mother weighed only a little over 5 pounds at birth and was apathetic and would not nurse. On the ninth day it developed progressive pemphigus on the soles, and paronychia. The mother was then given 0.3 gm. of "606" subcutaneously; 3 days later all the nursling's symptoms began to subside and within 2 days the infant was transformed into an apparently healthy, hungry and rosy babe. He explains this transformation in the child as the result of the production of antibodies in the mother from the sudden destruction of the spirochetes and liberation of their endotoxins. It was ascertained that the drug did not pass into the mother's milk. Ehrlich has expressly warned against treating infants directly with the "606," as the sudden destruction of the spirochetes might flood the little body with endotoxins and cause serious intoxication. By treating the mother it seems possible to obtain the desired result without this danger. Iversen adds that in seeking a wet nurse for a syphilitic infant, one that is already syphilitic should be given the preference, an injection of "606" being given as a preliminary.

90 and 91. **Creeping Exercises in Treatment of Scoliosis.**—Fränkel reviews the experiences with Klapp's method of creeping gymnastics at the Berlin surgical clinic in charge of Bier. (It was described in THE JOURNAL, Feb. 24, 1906, page 625.) He states that it is proving all that was hoped for it at first not only for prevention and treatment of the scoliosis but for the secondary heart disturbances, as he shows by a number of case reports and illustrations "before and after." The position assumed in this creeping counteracts the tendency to abnormal curvature of the spine. As a typical example of the benefit that can be derived he cites the case of a girl of 16 with dorsolumbal scoliosis who for 8 years had suffered from palpitation of the heart and shortness of breath, fainting occasionally when standing long. She had tried orthopedic gymnastics but had been obliged to give up all exercises of the kind and had been warned against them. The right heart was enlarged and also the left auricle, and there were signs of mitral stenosis. She has been doing the creeping exercises now for 11 months; the kyphosis and scoliosis have been materially loosened up and the heart disturbances have entirely subsided. The girl now plays tennis and dances without fatigue and has a very healthy aspect. The creeping has not only a symptomatic action but by loosening up the spine changes the location of the heart, large vessels and lungs. In 2 cases a heart defect had developed in consequence of an infectious disease and the curvature of the spine was of minor importance; the favorable influence of the creeping exercises in these cases opens up new prospects for treatment of organic heart disease. In one of the cases a concomitant area of dulness over the left apex cleared up during the exercises; it seems evident that the creeping by mobilizing the thorax provides better conditions for ventilation and circulation in the lungs. Klapp's experiences with these creeping exercises in treatment of disturbances entailed by Stiller's universal asthenia and also in orthostatic albuminuria are encouraging. Fränkel remarks in conclusion that the creeping exercises represent great progress even if considered only as an effectual means of prophylaxis of scoliosis and for active mobilization of the chest and thoracic vertebræ. Brugsch, from the standpoint of the internist, adds an endorsement of Fränkel's assertions. Radioscopy shows that the heart is inclined to be unusually small in these cases; this sustains the assumption that the scoliosis is to some extent one manifestation of Stiller's universal asthenia, that is, the orthogenetic-degenerative constitutional type. For the aplastic heart nothing could be better adapted, he adds in conclusion, to answer the urgent indications for improving conditions in the circulation and respiration than Klapp's technic for creeping exercises for children and adults.

92. **Bismuth Paste in Chronic Suppurative Processes.**—Dr. Beck's work in this line is familiar to all readers of THE JOURNAL.

93. **The Personal Equation in Tuberculin Treatment.**—Saathoff remarks that the present year has witnessed a revolution in the matter of tuberculin treatment; although opinions still differ as to the best mode of application there is no longer any question that tuberculin treatment has won a permanent place for itself in the treatment of tuberculosis. The divergences of opinion that still prevail, he remarks, are due to the facts ignored by too many that each individual has his own special type of reaction to the tuberculin and that the reacting capacity varies from time to time. The personal factor is too often overlooked. The individual reacting capacity can be estimated from the local reaction at the point of injection or site of the Pirquet skin test, the changes here presumably paralleling the changes that occur in the focus and thus serving as an index of the reacting capacity. It is preferable, he states, to make the subcutaneous injection in the outside of the forearm; injected into the looser tissue on the trunk the tuberculin diffuses too rapidly to permit any estimate of the skin sensitiveness. Real progress in the fight against tuberculosis will never be attained, he remarks, until tuberculin treatment becomes

a routine measure in general practice and thus the masses are enabled to get the benefit of it. The reaction to the Pirquet test shows the reacting capacity of the patient, whether intense or weak, and the local skin sensitiveness at the first subcutaneous injection shows whether the dose should be increased or reduced. The optimal reaction at the point of injection is an infiltration of the subcutis extending over an area between the size of a silver quarter and that of a silver dollar, with a slight redness, swelling and painfulness of the skin above. If the local reaction is of this type he continues with the same dose; if less than this he increases and if more intense he reduces the dose. He waits about 3 days after the complete subsidence of the skin reaction before making another injection. With this technic there are no appreciable signs of a focal reaction, but he assumes that there is a similar reaction in the focus as in the skin, combining all the curative factors of serous imbibition, cellular exudation, etc. Three months is the minimal duration of a course of tuberculin treatment, he says.

### Therapeutische Monatshefte, Berlin

*August, XXIV, No. 8, pp. 405-460*

97 *Ehrlich's "606" in Syphilis. (Die experimentelle Chemotherapie der Spirillosen.) W. Heubner.
98 Treatment of Erections in Children. A. Niemann.
99 Subpreputial Method of Applying Mercury in Treatment and Prophylaxis of Syphilis. P. Schrumpf.

97. **Ehrlich's "606" in Syphilis.**—This article is the opening chapter of a work on chemotherapy of spirilloses, now in press, written by Ehrlich, Hata and several collaborators.

### Wiener klinische Wochenschrift, Vienna

*August 18, XXIII, No. 33, pp. 1193-1220*

100 *Ehrlich's "606" in Syphilis. (Bericht über die bisherigen Resultate der Behandlung der Syphilis mit dem Präparate von Ehrlich-Hata.) W. Pick.
101 Asurol in Treatment of Syphilis. H. Rock.
102 Proteolytic Ferment Index in Human Blood. (Die Methode der quantitativen Bestimmung des proteolytischen Leukozytenfermentes und über proteolytischen, "Fermentindex." Index proteolyticus, der Leukozyten im menschlichen Blute.) M. Franke.
103 The Meiostagmin Reaction in Serous Effusions. (Die Meiostagminreaktion in serösen Ergüssen.) A. Gasbarrini.

100. **Ehrlich's "606" in Syphilis.**—Pick says that the specific action of "606" resembles that of quinin in malaria, and that the fact that the cure is not always complete with the small dose used to date does not detract from its importance. Its action is most apparent in malignant syphilis, all the manifestations of which disappeared completely in the 8 cases of this type in his experience. In the 10 cases in which the "606" was applied before the development of secondary phenomena none has developed to date. Rebellious lesions on the mucosa vanished in some cases the day after the injection and by the fourth day in all, although in some of these cases these lesions had persisted for years refractory to all treatment. In one such case an ulcerative syphilid involving the whole of the hard and part of the soft palate, which had persisted for 8 years practically unmodified by vigorous mercurial and iodid treatment, cleaned up by the third day after the injection and by the end of another week had entirely healed over. The amount of urine voided was often much reduced after the injection for a few days, the total not surpassing 400 or 500 c.c.; the patients also lost their appetite and experienced a dryness in the throat while the pulse increased to 90 up to 108. A febrile reaction was frequent, but the temperature reached 39.8 C. (103.5 F.) in only one case.

### Zentralblatt für Chirurgie, Leipsic

*August 20, XXXVII, No. 34, pp. 1113-1152*

104 *Suture of Fractured Neck of the Humerus with Strip of Fascia from Patient's Thigh. (Knochennaht mit Fascienstreifen.) C. Ritter.
105 Treatment of Non-Malignant Tumors in the Bladder with High-Frequency Current. (Behandlung von gutartigen Geschwülsten der Harnblase mittels Oudinstrahlen.) E. Beer.

104. **Suture of Fractured Bone with Strip of Patient's Fascia.**—Ritter sutured the broken surgical neck of the humerus in a woman of 80 with strips of fascia taken from her right thigh. He twisted each strip as it was passed through the holes bored in the bone and then sutured the strips together and to the periosteum. The splint was removed and massage commenced in 2 weeks and consolidation was complete in less than 2 months. The arm has not been shortened and can be lifted and twisted to 65 degrees without moving the scapula. The fascia healed solid with the periosteum. He is now experimenting on animals to learn the ultimate fate of strips of fascia used in this way for suturing bones.

### Zentralblatt für Gynäkologie, Leipsic

*August 20, XXXIV, No. 34, pp. 1129-1160*

106 *Local Anesthesia for Alexander-Adams Operation in Thirteen Cases. A. Kraatz.
107 *Manual Stretching of the Pelvic Outlet as Aid to Delivery. (Ueber Beckendehnung der Kreissenden.) K. W. Krug.

106. **Local Anesthesia for the Alexander-Adams Operation.** Kraatz has performed this operation in 13 cases under local anesthesia. For very excitable patients he applied the ether mask and used a few drops of ether for a sham anesthesia and was able to continue without further trouble. The only death that has occurred in the clinic with which he is connected among the many hundreds of cases in which this operation has been performed was due to the general anesthesia, and consequently the successful substitution of local anesthesia has been welcome.

107. **To Stretch the Pelvis of Parturients.**—One centimeter may be added to the true conjugate diameter, Krug states, by inducing lordosis by an interposed cushion or by the Walcher position and the diameter can be still more enlarged by stretching the parts further apart by introducing three fingers of each hand deep into the vagina and pushing the bony prominences apart, using the backs of the hands for the lever. The pressure is applied only during the acme of a labor pain, the pelvis being lifted a little at the same time. The woman whom he delivered in this way after protracted ineffectual labor said that the pressure materially reduced the intensity of the labor pain.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*August 16, XXXI, No. 98, pp. 1033-1040*

108 Echinococcus Cysts in the Ligaments Supporting the Liver. (Cisti da echinococco nel legamento sospensore del fegato.) I. Bruchi.

*August 18, No. 99, pp. 1041-1048*

109 *Acute Influenzal Arthritis. G. Ghedini.

109. **Influenzal Arthritis.**—Ghedini reports a case in which the influenza bacillus, cultivated from the blood, was evidently responsible for the swelling and pain in various joints observed after a few days of general symptoms of influenza. The multiple arthritis changed its localizations and finally subsided entirely by the end of a month. The fever kept up for about 25 days. Among the articulations involved were the sternoclavicular and the temporomaxillary. The disturbance in the single joints was comparatively brief and the whole syndrome proved unexpectedly mild with nothing at any time to indicate that the endocardium has suffered.

### Policlinico, Rome

*August 21, XVII, No. 34, pp. 1059-1090*

110 Experimental Research on Origin of "Estival Fever." N. Melchiorre and T. M. Napolitani and A. Tedeschi.

*August, Medical Section, No. 8, pp. 333-380*

111 Research on Uncinariasis. (Contributo allo studio dell'anemia da *Necator americanus*—Stiles.) G. Quadri.
112 *Infected Anopheles in Certain Malarial Zones in Italy. G. Noé.
113 *Sahli's Desmoid Reaction. G. Cantoni.
114 Action on Endocardium of Extracts of Malignant Tumors. L. Panichi. Commenced in No. 7.

112. **Infected Mosquitoes in Malarial Zones in Italy.**—Noé found about the same proportion of infected anopheles as in former years although the number of cases of malaria is growing smaller with each year. An encouraging feature, however, is that the percentage of mosquitoes found to be infected diminished as the season advanced, contrary to the experience in previous years. He ascribes this to the screening of the houses which not only protects against the mosquitoes outside but it also retains in the houses the mosquitoes which have found their way inside and become infected.

113. **The Desmoid Reaction.**—Cantoni has found this test extremely valuable in his practice, and reports 43 cases with

positive and 23 with negative findings, the latter group including 5 cancer cases.

### Riforma Medica, Naples

*August 15, XXV, No. 33, pp. 897-924*

115 Graphic Record of the Knee-Jerk. (Contributo allo studio grafico del clono della rotula.) G. Breccia.
116 Form of Neuritis with Hypertrophy of the Nerves Occurring in Several Members of a Family. (Nuova forma di nevrite ipertrofica famigliare. Il tipo Pierre Marie.) P. Boveri.
117 Primary Cancer in Herniated Appendix. F. Gangitano.

### Hygiea, Stockholm

*July, LXXII, No. 7, pp. 705-783*

118 *Successful Puncture of Intestine or Enterotomy in Six Cases of Ileus. (Sex fall af ileus, med framgång behandlade med tarmpunktion resp. enterotomi, jämte några ord om den därvid använda operationstekniken.) E. A. Eriksson.
119 *Gumma at the Cardia. (Till den viscerala syfilis' kasuistik. Gumma cardiæ.) C. Cronquist.
120 Case of Rupture of Brain Tissue. (Ett fall af hjärnbråck.) H. Malmqvist.
121 Successful Cesarean Section in Patient with Contracted Pelvis and Heart Defect. (Kejsarsnitt med lycklig utgång vid trångt bäcken och hjärtfel.) A. Troell.
122 Rupture of Bladder During Alcohol Intoxication. (Ett fall af blåsruptur i samband med alkoholrus.) T. Frieberg.
123 Case of Acardius Amorphus. C. F. Heijl.

118. **Puncture of Intestine or Enterotomy for Ileus.**—The ileus was due to volvulus of the cecum and colon or sigmoid flexure, paralysis of the bowel after herniotomy, coprostasis and adhesions or diverticulitis in Eriksson's 6 cases. Treatment in each was by a laparotomy and puncture of the bowel; in only a few of the cases was it necessary to make an actual enterotomy, the lesser operation generally sufficing. Since Eriksson has restricted his ileus operations to mere puncture the outcome has been generally good; he has lost only one patient, a man of 64 with ileocecal invagination and bronchitis, who succumbed to chloroform intoxication.

119. **Gumma in the Cardia.**—Cronquist's patient was a man of 42 who had had some difficulty in swallowing for three years, gradually growing more and more severe. The presumptive diagnosis was cancer of the cardia, but a casual remark led to the discovery of a history of certain symptoms years before suggesting possible syphilis. Under tentative mercurial treatment the stenosis at the cardia rapidly subsided.

### Norsk Magazin for Lægevidenskaben, Christiania

*August, LXXI, No. 8, pp. 785-864*

124 *How Long Should the Lying-In Woman Stay in Bed? (Hvorlænge bør en barselkvinde ligge tilsengs?) K. Brandt and J. Horn.
125 *Infected Cystic Kidney. Recovery After Nephrectomy. (Inficeret cystenyre; nefrektomi; helbredelse.) P. Bull.
126 Functional Tests of the Heart. (Den funktionelle diagnostik, dens maal og midler, specielt med hensyn till hjertets funktion.) S. Madsen.

124. **How Long Should Women Stay in Bed After Delivery?**—Brandt and Horn state that their investigation of the subject has shown that involution and healing are not well under way before the tenth or twelfth day. If the woman gets up before this date infection is liable to occur and may easily be overlooked while a predisposition to genital prolapse may develop.

125. **Infected Cystic Kidney.**—Bull remarks that the diagnosis is generally very difficult, as the physician seldom thinks of the possibility of this rare condition. The cystic kidney is peculiarly liable to become infected. Sieber found infection mentioned in 10 per cent. of 200 cases on record, and Borelius in 1 of his 4 cases. Bull calls attention to the family tendency in his cases; a man and 3 of his 11 children and a brother and sister had cystic kidneys, the diagnosis being confirmed by operation or autopsy. The symptoms came on about the age of 24, and none of the third generation has reached this age yet. Notwithstanding that the tendency to cystic kidney is bilateral as a rule, if one kidney is predominantly affected while its mate is still functionally capable, nephrectomy may be indicated. He reviews the northland literature on the subject and Sieber's monograph. In only 9 of the 200 cases was only 1 kidney involved, as determined at autopsy; both were involved in 150. In about 12 per cent. of all the cases the lesion had never induced appreciable symptoms. The urine may be normal but generally is like that with contracted kidney. The kidney region is usually tender and there may be vague or sharp pains, constant or paroxysmal. Intermittent hematuria was observed in 20 per cent. of the cases, hypertrophy of the heart in 50 per cent. and a hemorrhagic tendency was frequently apparent, apoplexy even in the young, epistaxis, intestinal hemorrhage and hemoptysis. Nephrectomy was done in 61 cases with 20 fatalities; 8 of the patients are still living after from 3 to 7 years. Nephrotomy was done in 10 cases, on both kidneys in 4, with 2 fatalities.

### Ugeskrift for Læger, Copenhagen

*August 11, LXXII, No. 32, pp. 943-968*

127 *The Leukocyte Count in Different Parts of the Circulation at the Same Time. (Om Leukocyttælling og Inhomogenitet.) V. Ellermann and A. Erlandsen.

*August 18, No. 33, pp. 969-996*

128 Indications for Treatment in Appendicitis. E. Müller.

127. **The Leukocyte Count and Inhomogeneity.**—This latter term has been coined by Kjer-Petersen to express a variability in the leukocyte count in blood taken from different points in the circulation at about the same time. He found wide variations in this respect, but Ellermann and Erlandsen were unable to discover any tendency of the kind in 110 double examinations of the blood of 64 women patients.

## Books Received

Books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

A LABORATORY TEXT-BOOK OF EMBRYOLOGY. By Charles S. Minot, LL.D. (Yale and Toronto), James Stillman, Professor of Comparative Anatomy in the Harvard Medical School. Second Edition. Cloth. Price, $3.50 net. Pp. 402, with 262 illustrations. Philadelphia: P. Blakiston's Son & Co., 1910.

THE EFFECTS OF A RESTRICTED DIET AND OF VARIOUS DIETS ON THE RESISTANCE OF ANIMALS TO CERTAIN POISONS. By Reid Hunt. Paper. Pp. 93. Bull. 69, Hyg. Lab., P. H. and M.-H. S. Washington: Government Printing Office, 1910.

VACCINE THERAPY. Its Theory and Practice. By R. W. Allen, M.D., Late Clinical Pathologist to the Mount Vernon Hospital for Diseases of the Chest. Third Edition. Cloth. Price, $2 net. Pp. 277. P. Blakiston's Son & Co., 1910.

## New Patents

Recent patents of interest to physicians:

956258. Window tent. John G. Allen, Peoria, Ill.
955937. Atomizer. John R. Ballentine, Toledo, Ohio.
955938. Atomizer. John R. Ballentine, Toledo, Ohio.
956052. Pocket-atomizer. Frank C. Dorment, Detroit, Mich.
956325. Massage cup or tip. Joseph B. Fey, Columbus, Ohio.
956120. Producing manganates, permanganates, halogens and hydroxids. Florentine J. Machalske, Chicago.
956155. Invalid's chair. Rosa M. Olmsted, Columbus, Ind.
956438. Crutch tip. Edward H. Selbert, St. Louis.
956221. Magnetic tachometer. John K. Stewart, Chicago.
957035. Pasteurizer. Hans Christensen, Fort Atkinson, Wis.
956734. Manufacturing methane or mixtures of methane and hydrogen Paul Sabatier, Toulouse, France.
957295. Recovering potash salts. Augusto Alberti, Rome, Italy.
957548. Inhaler. Walter S. Doane, Worcester, Mass.
957758. Swing for osteopathic tables. William E. Fogle, Bath, N. Y.
957761. Making sodium sulfite and ammonium chlorid. Richard Friedrich, Glosa, near Chemnitz, Germany, and F. Hirsh, Vienna, A. H.
957204. Making a medicinal compound. Anton Garicsan, Chicago.
957718. Device for the correction of flat foot, weak foot or fallen arch of the foot. Frederick C. Schumacher, New York
957267. Prophylactic drinking vessel. James L. Sowell, Jasper, Ala.
957449. Disinfectant holder. Charles J. Walz, New Haven, Conn.
958697. Atomizer. Frank C. Dorment, Detroit.
958488. X-ray tube. Henry Green, Hartford, Conn.
958133. Sterilizer and drier. Aage Jensen, Eureka, Cal.
958259. Disinfecting device. Fernand Le Faguays, Nantes, France.
957976. Atomizer and the like. Owen D. Lucas, Bayswater, London, England.
958267. Truss. Thomas E. Martin, Buffalo, N. Y.
957982. Electric vibrator. Sampson W. Moon, Chicago.
958527. Respirator (smoke protector). Martin Panian, Eveleth, Minn.
958536. Spraying attachment. Charles H. Rath, Philadelphia.
958179. Surgical instrument. John S. Rydell, Minneapolis.
958180. Producing tantalum. Johannes Schilling, Halensee, near Berlin, Germany.
958569. Respirator and inhaler. Richard Venner, Barre, Vt.
958199. Corn and bunion plaster. Eugene J. Ward, New York.
40700. Design prescription case. Charles F. Kurz, Cleveland, O.